

一起开始我们的  
“发现之旅”吧...  
*Let's start our voyages  
of discovery...*

**FAST**

烟台未来自动装备有限责任公司（原烟台气动元件厂）始建于1973年，原机械部重点企业。2001年，原烟台气动元件厂正式改制，更名为烟台未来自动装备有限责任公司。

1989年，公司在同行业中率先获得国家二级企业称号；2000年，通过ISO9001国际质量体系认证；2002年，通过美国船用液压系统ABS认证；2008年公司荣获中国国家标准突出贡献单位；2010年获山东省高新技术企业称号，2011年获得山东省著名商标称号。

中国第一条气缸诞生地；中国第一代气缸设计标准的缔造者；中国液压气动密封件工业协会常任理事单位；中国专用汽车工业协会理事单位；中国钢铁行业协会理事单位；中国橡塑机械协会理事单位。

公司占地45600平方米，建筑面积26316平方米；现有职工400余人，工程技术人员69人，其中高级工程师12人，工程师35人。公司拥有包括各类通用机床、数控机床、焊接设备、特种设备及实验检验设备418余台套，形成了多条产品专业生产线。

产品分五大模块：液压气动元器件、液压气动控制系统、专用（环卫）车辆液压油缸及液压系统集成解决方案、汽车检测维修设备、包装输送成套设备。其中液压气动元器件是公司的主导产品，非标设计能力在行业中首屈一指；液压与气动控制系统，是公司1985年开始涉足的领域，并在近年来得到突飞猛进的发展，为工业炉、电石炉、铸造生产线、蓄电池生产线、锻造生产线、高端工程机械等领域提供了高端的液压油缸以及液压集成系统；专用车辆配套液压油缸，主要为工程车辆、环卫车辆提供配套油缸产品。公司2003年开始进入环卫专用设备和车辆油缸、液压控制系统的生产领域，于2008年建立了国内第一条双作用环卫车辆专用多级缸生产线，现在已形成了日系、美系、欧系环卫车辆油缸全系列的产品系列，同时开始向各个环卫车辆主机厂提供压缩式垃圾车、钩臂车、摆臂车、餐厨车、垃圾转运车、机箱一体站、垃圾压缩设备的液压系统集成解决方案，已形成了年产20万条油缸、2000台套液压系统的生产能力，在环卫车辆行业已经取得了绝对市场优势，是北美、欧洲、亚洲各区域最大主机厂的战略合作伙伴；汽车检测维修设备，涉足国内外的汽车后市场；包装输送成套设备，也是中国最早生产吨袋包装机的厂家之一。目前，五大模块共有100多个系列，1000多个规格的产品。

产品广泛应用于汽车、橡塑、冶金、化工、纺织、军工、工程机械、锻压机械、机床等行业，我们与各大企业建立了良好的合作关系，以优异的质量、周到的服务赢得了广泛赞誉。公司于1992年开始与日本三菱重工合作生产油缸，从零部件的制作，到油缸的装配，都传承于日本的技术与工艺，进入21世纪后，又吸收了德国、美国的技术与工艺，从产品的设计到制作工艺、密封圈的设计与选用都有独特的技术与技巧，保证了产品的质量与可靠性。

经过几十年的发展，公司集科研开发、生产加工、经营销售、技术服务、进出口贸易等于一体；公司在生产、进销存、技术定额等方面全面运行ERP系统，实现产品生产环节的可视化，可控化，品质管控环节的可追溯化；全面运用OA内部办公自动化体系，实现了办公环节的扁平式管理，使沟通更加顺畅、快捷、准确；HR人力资源管理系统，财务管理系统，让职能部门的工作更加高效、准确。建立了完善的企业信息化平台，具备了快速反应以及管理精细化。

公司在各大省会城市设有服务中心和办事处，远程服务网络节点完善，产品立足烟台，覆盖胶东，遍布全国；在上海、青岛、烟台设立了对外贸易窗口；继本土、香港、台湾外，油缸以及液压系统产品出口日本、德国、意大利、美国、加拿大、丹麦、瑞典、法国、俄罗斯、东南亚等地区与国家，享誉全球。

公司坚持“挑战零缺陷，向顾客提供满意的产品和服务”的质量方针，秉承“诚实、敬业、创新、团结、健康”的企业精神，着力打造民族品牌。

品质创造未来！

Yantai Future Automatic Equipments Co., Ltd (used to be called Yantai Pneumatic Works), is founded in 1973. It is one of the defined manufacturers by the Mechanical Department of China. We changed to name to Yantai Future in 2001 after restructured from state-owned company to joint-stock company.

In 1989, we obtained first in this industry the honorable title of national second-class enterprise. In 2000, we passed the verification of ISO9001, and in 2001 passed ABS qualification. We are awarded as the "Outstanding Contribution Unit to China National Standard" in 2008 and "High and New Technology Company of Shandong Province" in 2010.

The birthplace of the first air cylinder in China; Maker of the first generation standard for cylinder designing; Permanent member of HPSA; Member of Special Purpose Vehicle Industrial Association, Member of Steel Industry Association; Member of Rubber & Plastic Machinery Association.

Now the company covers a total area of 45600 square meters with a building area of 26316 square meters. There are 400employees in the company including 12 senior engineers and 35 engineers. The workshop is equipped with over 418 sets of manufacturing units and testing units including various universal machining tools, NC machines, welding equipments, special type machines and inspection tools. Production lines for many products are formed.

Now we have 5 types of products: Hydraulic & Pneumatic Cylinders, Hydraulic & Pneumatic Systems, Hydraulic cylinder and system integrated solution for Special Purpose Vehicles, Auto Repair Equipments and Packing & Conveying Machines.

Hydraulic and pneumatic cylinders are traditional products of our company. The non-standard designing is the top level in this industry; We entered the industry of hydraulic & pneumatic system in 1985 and improved rapidly in the latest years; and supplied high-quality hydraulic cylinders and integrated systems for many industries such as industrial furnace, calcium carbide furnace, casting production line, storage battery production line, forging production line, and high-end construction machinery etc. Hydraulic cylinders for special purpose vehicles are mainly used on engineering and environmental vehicles; we went into the industry of environmental purpose equipments, and established the first professional production line of double telescopic hydraulic cylinder for environmental vehicles in China. Till now, we've formed the complete products series for American, Japanese and European environmental vehicles. At the meantime, we started to supply hydraulic system integration solution of waste compactors, hooklifts, arm-swing vehicles, refuse transfer vehicles, integral compressor and garbage compression equipments for environmental vehicles' manufacturers. We've realized the yearly production capacity of 200.000 cylinders and 2000 sets of hydraulic systems, and dominated the environmental vehicles' market in North America, Europe and Asia etc. Auto Repair Equipments are well received by the automotive aftermarket both home and abroad; We are the first and leading company for manufacturing packing machines, especially jumbo bag packing machines. Now there are 100 series of products with over 1000 models for these 5 products types.

Products are widely used in industries like automobile, rubber & plastic, metallurgy, chemistry, textile, military affairs, construction machine, metal forming machinery, machine tools, etc. With high-quality products and considerate after-service, we have won great reputation. Our company started to cooperate with Mitsubishi in 1992, we adopted Japanese technology and process from the fabrication of components to cylinder assembly. In the 21st century, we also learned technology and process from Germany and America, we can ensure the reliability and high-quality of our products owing to the unique technology and skills in products' design& fabrication, seals' design and selection.

Incorporating research, manufacturing, sales, technical service and international trade, our company has become a manufacturing base after decades of years' development; ERP system is used during the manufacturing, inventory and technical quota, which realizes the visualization and controllability of manufacturing procedures. This system also helps to track the quality control. Internal Office Automation is used to strengthen the connection between offices and improve the efficiency and accuracy of each functional department. Complete enterprise informationization is set up for quick response and lean management.

Our company has set up service centers and branches in provincial capital cities for long distance service. Based in Yantai and covered most of Jiaodong Area, our products are well received both China and abroad. International trade companies for our products are set up in Shanghai, Qingdao and Yantai. Besides Mainland, Hongkong and Taiwan, our products are well received by our customers from America, Germany, Japan, Italy, Canada, Denmark, Sweden, France, Russia and Northeast Asia, etc. Our company insists on the quality policy of "Challenge the zero disfigurement and provides satisfying products and service to the customers". With the spirit of "Honesty, devotion, innovation, consolidation and health", we are building our own brand "FAST" a national brand.

Yantai Future creates the future with quality.

# FAST 法斯特

诚信，唯有诚信！  
Credit, only credit!

## 资质荣誉 Quality Certificate



### 企业使命 Enterprise Roles

提升客户 关爱员工 造福社会

Improve customer, care employee, benefit the society.

### 经营理念 Business conception

诚信，唯有诚信

Credit, only credit

### 愿景目标 Prospective Goals

液压气动 动转全球 成套系统 统领五洲

汽车服务 服务世界 自动装备 装备未来

Hydropneumatic Turn the whole world

Integrated system Command the five continents

Motor service Serve the whole world

Automatic equipment Equip the future

### 经营宗旨 Business tenet

发展企业，保障员工利益

Develop the business and ensure the interests of the employees

### 企业精神 Enterprise spirit

诚实、创新、敬业、团结、健康

Honesty, innovation, hard-working, unity, health.

### 质量方针 Quality policy

挑战零缺陷、向顾客提供满意的产品和服务

Challenge zero defects, provide satisfactory products and service for the customer

### 经营方针 Business policy

以客户为导向，以质量求生存

以创新求发展，以管理求效益

Guided by customers, survival by quality, develop by innovation and pursue benefits by management

### 用人理念 Staffing conception

尊重人才、培养人才，与企业共发展

Respect and train talent to develop with the enterprise together



**FAST**  
法斯特

挑战零缺陷 向顾客提供满意的产品和服务  
*Challenge zero defects, provide satisfactory products and service for the customer*

## 工艺装备与检测

## Technological Equipment & Inspection



## 典型客户 Customer

### 国内客户 Domestic customers



### 国外客户 Foreign customers



## 应用领域 Applications

公司产品广泛应用于汽车、橡塑、冶金、船舶、军工、化工、机床、工程机械、锻压机械等行业。  
Our products are widely used in auto, rubber, metallurgy, shipping, military, lathe, engineering, casting industry, etc.



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产品概述  
 Products introduce

烟台未来自动装备有限责任公司主要产品有：各种规格的气动执行元件、控制元件、气动附件、真空元件、液压执行元件、气动系统、液压系统以及包装机械和汽车钣金设备。

液压执行元件包括YGX微型油缸LYG系列油缸、采用日本JISB8354-1992 标准设计的YG系列液压缸、FHSG系列工程液压缸、CD系列重载液压缸、Y-HG1冶金设备用液压缸、特种车辆用液压缸、YS环卫车辆（压缩）专用油缸系列，YYFH环卫（钩臂）专用油缸系列以及根据特殊需求生产的各种非标准液压缸。

液压系统包括液压站和根据用户提供的原理图及特殊要求专门设计制造的集成装置。

承接非标准产品及系统转化设计。

The mainly products of YANTAI Future Automatic Equipment Company Limited are kinds of pneumatic actuators, controlling parts, air-operated fittings, vacuum parts, hydraulic actuators, pneumatic systems, hydraulic systems, packing machines and plastic thread drawing machines.

The hydraulic actuators include that YGX series minisize hydraulic cylinders, LYG series hydraulic cylinders, the YG series hydraulic cylinders which was designed by Japanese JISB8354-1992 standard, FHSG series engineering hydraulic cylinders, CD series heavy hydraulic cylinders, Y-HG1 series metallurgical standard hydraulic cylinders, special vehicle hydraulic cylinders and manufactured various non-standard hydraulic cylinders for clients' request.

The hydraulic systems include that hydraulic system assembly and the compositive equipments that we designed and manufactured basis on your working condition and request, such as pressure, flux and action request about.

We can manufacture various non-standard products and systems.

标准系列油缸 Standard series hydraulic cylinder



工程机械系列油缸 Engineering series hydraulic cylinder



专用车系列油缸 Special trucks series hydraulic cylinder



液压系统 Hydraulic system





## 液压缸的使用与维护注意事项

### Notes on using and maintaining hydraulic cylinders

#### 使用与维护

1. 液压缸使用工作油的粘度为29~74mm<sup>2</sup>/S，推荐使用ISO VG46抗磨液压油。工作温度在-20?~+80?范围内。环境温度和使用温度较低时，可选用黏度较低的油液。如有特殊要求，请单独注明。

2. 液压缸要求系统过滤精度不低于100μm要求，要严格控制油液污染，保持油液的清洁，定期检查油液性能，并进行必要的精细过滤和更换新的工作油液。

3. 安装时要保证活塞杆顶端连接头的方向应与缸头、耳环（或中间铰轴）的方向一致，并保证整个活塞杆在进退过程中的直线度，防止出现刚性干扰现象，造成不必要的损坏。

4. 当液压缸安装上主机后，在运转试验中应先检查油口配管部分和导向套处无漏油，并应对耳环和中间铰轴轴承部位加油。

5. 液压缸若发生漏油等故障要拆卸时，应用液压力时活塞位置移动到缸筒的任何一个末端位置，拆卸时应尽量避免任何不必要的敲打以及突然的掉落。

6. 在拆卸之前，应松开溢流阀，使液压回路的压力降低为零，然后切断电源使液压装置停止运转，松开油口配管后，应用油塞塞住油口。

7. 液压缸不能作为电极接地使用，以免电击伤活塞杆。

8. 常见故障及排除方法可参照下页所列方法维修。

#### using and maintaining

1. The viscosity of working oil used in the hydraulic cylinder is 29~74mm<sup>2</sup>/s. It is recommended to use ISO VG46 wear-resistant hydraulic oil. The normal working oil temperature range is between -20?~+80?. In the case of lower ambient temperature and used temperature, low viscosity oil may be used. Please specify separately special requirements, if any.

2. The system filtration accuracy required by the hydraulic cylinder is at least 100 μm. Care must be taken to control oil pollution and to keep oil clean. Check regularly the oil feature and use fine filter or replace with new working oil if necessary.

3. When installation, make sure the piston rod head connector has the same direction as that of the cylinder head, eye ring (or middle trunnion). Ensure the piston rod can move smoothly in its reciprocal stroke to avoid rigid interference and guard against unnecessary damage.

4. After the hydraulic cylinder is installed on the main machine, check whether there is oil leakage in the piping part and guiding sleeve in operation test. Lubricate the eye ring and middle trunnion bearing.

5. In the case of oil leakage, make use of hydraulic force to move the piston to either end of the cylinder when the hydraulic cylinder needs disassembly. Avoid unnecessary knocking and falling-down during disassembly.

6. Before disassembly, loosen the relief valve and decrease the pressure to the hydraulic circuit to zero. Then cut off power supply to stop the hydraulic equipment. Plug the ports with the plastic plugs when the port pipes are disconnected.

7. The hydraulic cylinder cannot be used as electrode for grounding to avoid electrically damaging the piston rod.

8. For usual trouble and troubleshootings, refer to the following table in next page.

#### 常见故障及排除方法/ usual trouble and troubleshootings

现象 Trouble	产生原因 Possible causes	排除方法 Troubleshooting
活塞杆部漏油 The position of piston rod leakage	1. 活塞杆碰伤或划伤 The piston is distressed with bump or pull. 2. 防尘密封圈挤出和翻唇 The dust-proof seal ring is squeezed out or lapped. 3. 活塞杆上的密封件磨损或损伤 The sealing parts between piston and piston rod is worn out or damaged.	1. 轻微损伤用极细的砂纸或油石修磨，不能修的更换新件 Polish use very fine abrasive paper or oil stone, and replace those that cannot be required. 2. 拆开检查，重新更换 Disassembly, check and replace it. 3. 更换新密封件 Replace it with new sealing parts.
出力不足 Lesser output power	1. 缸筒内表面拉伤 The cylinder interior is distressed with pull. 2. 活塞上的密封件磨损或损伤 The sealing parts at piston is worn out or damaged.	1. 轻微损伤用极细的砂纸或油石修磨，不能修的更换新件 Polish use very fine abrasive paper or oil stone, and replace those that cannot be required. 2. 更换新密封件 Replace it with new sealing parts.
活塞杆爬行和蠕动 Piston rod crawling and squirming	1. 液压缸内进入空气或油中有气泡。 Air in the hydraulic cylinder or air bubbles in the oil. 2. 液压缸的安装位置偏移 The hydraulic cylinder is out of installation. 3. 活塞杆全长或局部弯曲 The whole piston is bent or partly bent. 4. 缸内锈蚀或拉伤 The cylinder interior is rusty or distressed with pull. 5. 液压缸安装定心不良，使活塞杆伸出困难 The hydraulic cylinder is not well aligned so it is difficult to extend the piston rod.	1. 松开接头，将空气排出 Loosen the connector, and discharge air 2. 在安装时检查与主机运行方向平行 During installation, make sure that it moves in parallel with the main machine. 3. 活塞杆全长校正不直度≤0.1/100mm或更换活塞杆 Straighten the piston rod, with its camber less than 0.1/100mm in total length or change it. 4. 去除锈蚀和毛刺，情况严重时更换缸筒 Remove rust and burrs, and replace the cylinder if the problem is serious. 5. 拆下来检查安装位置是否符合要求 Disassembly it and check whether the installation position is appropriate.

#### 订货注意事项

1. 订货时请详细写明型号和行程
2. 除本样所编液压缸外，可根据用户需要承接各种非标准液压缸的设计制造，订货时请与公司市场部或技术部门联系。如有技术问题请拨打我们的技术服务电话：+86-0535-6511033

#### Notes on ordering

1. Please specify the model and stroke when placing orders.
2. In addition to the hydraulic cylinders included in the catalogue, we can also design and manufacture the various non-standard hydraulic cylinders, Please contact with our marketing department or technical department when ordering. Please to dial our technical services number +86-0535-6511033 if you have some technical problems.

## YGX微型油缸 YGX minisize hydraulic cylinders

### 用途与特征/Applications and features

该产品性能先进，结构紧凑，体积小，外形美观可与日本JIS形小型油缸相互通用，互换，用途广泛。  
The features of this product are advanced in capability, compact in structure, tiny in volume, beautiful in figure. It can be replaced with Japanese JIS series minisize hydraulic cylinders and has multiple utilizations.

### 图形符号/Drawing symbol:

### 技术参数/ Technical Parameter:

缸径/Cylinder bore	20,25,32
使用压力/Working pressure	7MPa
最小启动压力/The smallest start pressure	0.3MPa
耐压力/ Experiment pressure	10.5MPa
使用速度范围/ Scope of using speed	10~300mm/sec
标准行程/ Standard stroke	20,50,75,100,150,200
行程范围/ Scope of stroke	0<S≤300
使用温度范围Scope of using temperature	10?~80?
传动介质/ Transmission medium	常规矿物液压油/General mineral hydraulic oil

### 微型油缸有效受压面积/The effective pressed areas of minisize hydraulic cylinder

缸径 Cylinder bore	油缸有效受压面积(cm <sup>2</sup> ) The effective pressed areas of hydraulic cylinder (cm <sup>2</sup> )	
	无杆腔/Non- rod chamber	有杆腔/Rod chamber
Φ20	3.1	2.3
Φ25	4.9	3.7
Φ32	8.0	6.5

理论输出力的计算公式/ The count formula of theory output power:

理论输出力/ Theory output power:  $F=P \times A$  P: 工作压力/Working pressure A: 面积/Areas

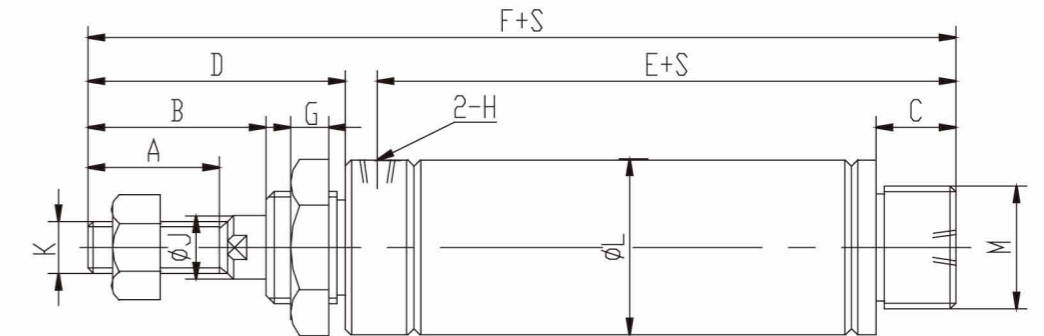
### YGX微型油缸型号说明/The model code of YGX minisize hydraulic cylinders

YGX 缸径/Cylinder bore 行程/Stroke — 安装形式/ Mounting mode — 连接形式/Connecting mode

ST 基本型/Standard type	T型/T type
LB 脚架型/vertical to axis foot type	Y型/Y type
FA 前法兰型/Rod side flange type	
CA 单耳尾座型/ Rod single clevis type	
TA 摆轴型/ Trunnion type	

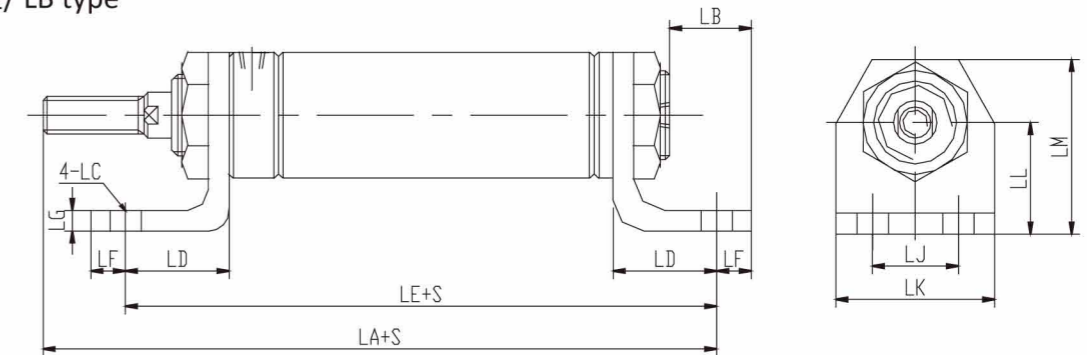
### 外形及安装尺寸/Conformation and Mounting Dimensions

#### ST型/ ST type



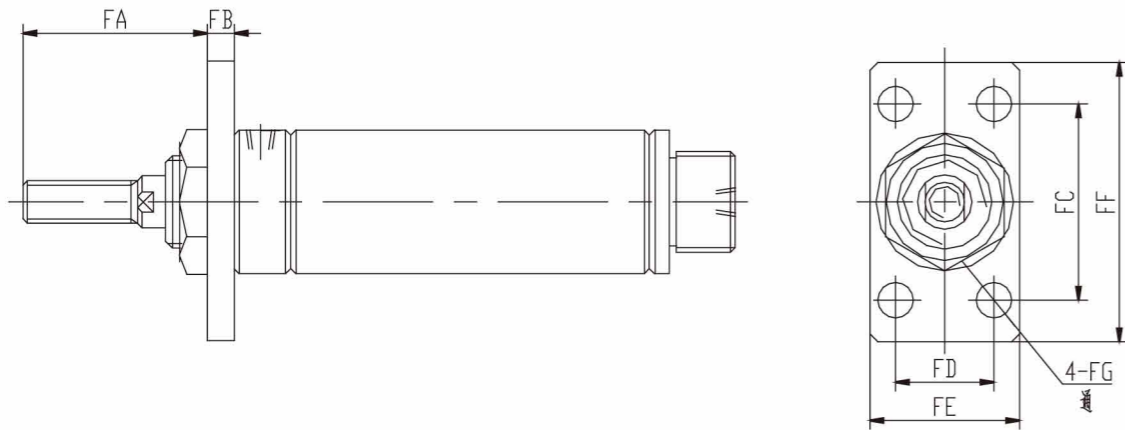
代号/Code	ST型/ST type											
缸径/Bore	A	B	C	D	E	F	G	H	J	K	L	M
Φ20	25	35	16	51	79	138	8	ZG1/8"	10	M8×1	29	M8×1
Φ25	25	35	16	51	79	138	8	ZG1/8"	12	M10×1.25	34	M10×1.25
Φ32	30	40	18	58	82	148	8	ZG1/8"	14	M12×1.25	42	M12×1.25

#### LB型/ LB type



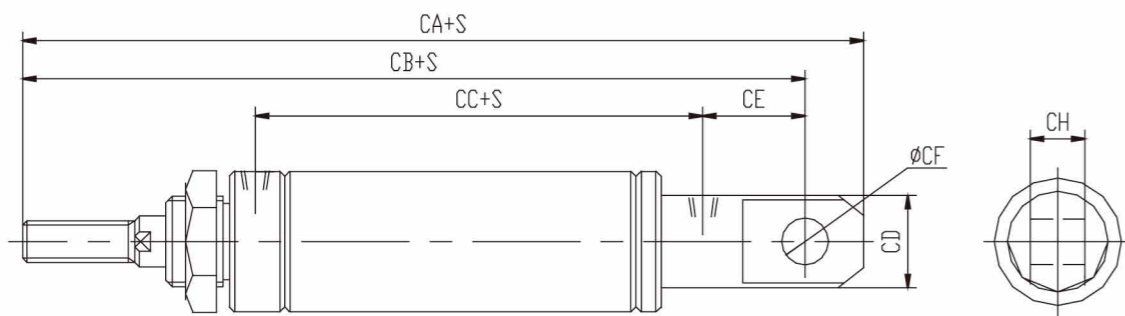
代号/Code	LB型/LB type											
缸径/Bore	LA	LB	LC	LD	LE	LF	LG	LJ	LK	LL	LM	
Φ20	152	24	9	30	131	10	6	26	46	32	50	
Φ25	152	24	9	30	131	10	6	26	46	32	50	
Φ32	164	24	9	30	131	10	6	26	46	32	50	

### FA型/ FA type



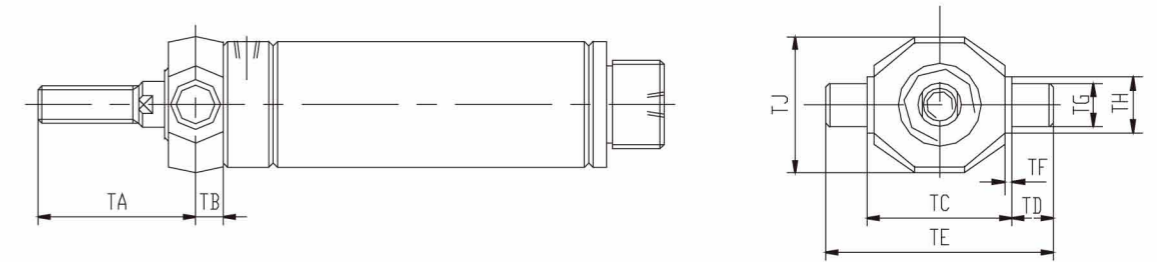
代号/Code	FA型/FA type						
缸径/Bore	FA	FB	FC	FD	FE	FF	FG
Φ20	45	6	50	25	38	66	9
Φ25	45	6	50	25	38	66	9
Φ32	49	9	55	25	38	71	9

### CA型/ CA type



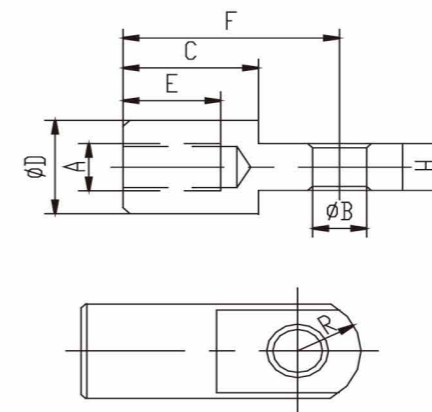
代号/Code	CA型/CA type						
缸径/Bore	CA	CB	CC	CD	CE	CF	CG
Φ20	162	152	73	18	20	8	10
Φ25	170	157	73	22	25	10	12
Φ32	184	169	76	26	27	12	14

### TA型/ TA type

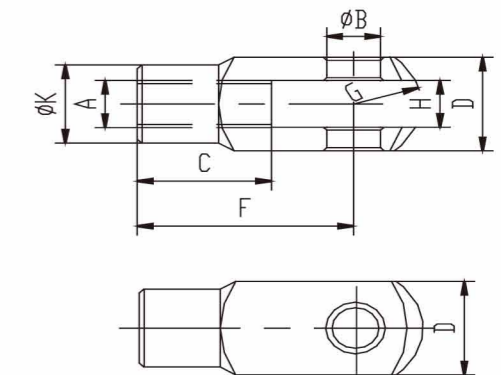


代号/Code	TA型/TA type								
缸径/Bore	TA	TB	TC	TD	TE	TF	TG	TH	TJ
Φ20	43.5	7.5	36	10	56	1	Φ10	Φ13	34
Φ25	43.5	7.5	36	10	56	1	Φ10	Φ13	34
Φ32	50.0	8.0	42	12	66	1	Φ12	Φ14	39

### T型/ T type



### Y型/ Y type



代号/Code	T,Y型/T,Y type									
缸径/Bore	A	B	C	D	E	F	G	H	K	R
Φ20	M8×1	8	20	16	14	32	SR13	8	14	10
Φ25	M10×1.25	10	25	20	17.5	40	SR15	10	18	12
Φ32	M12×1.25	12	30	24	21	48	SR18	12	20	14

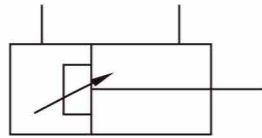
## YG系列油缸 YG series hydraulic cylinders

### 用途与特征/Applications and features

本产品可与采用日本JISB8354-1992标准安装形式及尺寸的油缸直接互换使用。结构紧凑而简单，与其它同等压力级油缸比体积小，安装形式多样而容易变换，易装易拆，活塞杆镀硬铬，单边铬层厚度为0.03~0.05mm。广泛应用于冶金、矿山、工程、轻化、纺织等机械。零件“三化”程度高，配件及维修方便。

The YG series hydraulic cylinders could be displaced by the hydraulic cylinder that was designed by Japanese JISB8354-1992 standard. The features of YGA series hydraulic cylinders are simple in structure, the smaller volume than the other same pressure level hydraulic cylinders. Various mounting mode and easy in changed. The piston rod is plated hard chromium. The hard chromium thickness is 0.03~0.05mm each side. It is widely used in metallurgical, mining, engineering, light chemistry, textile machinery etc. Parts highly in standardization and easy in maintenance.

### 图形符号/Drawing symbol:



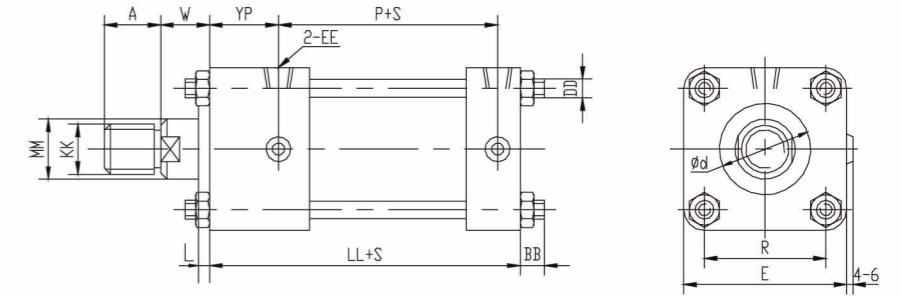
### 技术参数/ Technical Parameter:

油缸型号/Hydraulic cylinder model	YGB、YGB-L、YGC、YGC-L		
使用压力/Working pressure	7、14 MPa		
耐压/ Experiment pressure	21 MPa		
最低启动压力/ The min. start pressure	<0.3 MPa		
使用温度/Working temperature	-10°C~+80°C		
允许最大速度/Allowed max. speed	300mm/s		
效率/ Efficiency	>90%		
传动介质/Transmission medium	常规矿物液压油/General mineral hydraulic oil		
缸径/Cylinder bore	40、50、63	80、100、125	140、150、160
最大行程(mm)/Max. stroke (mm)	500	1200	2000

### 油缸有效受压面积/The effective pressed areas of hydraulic cylinder

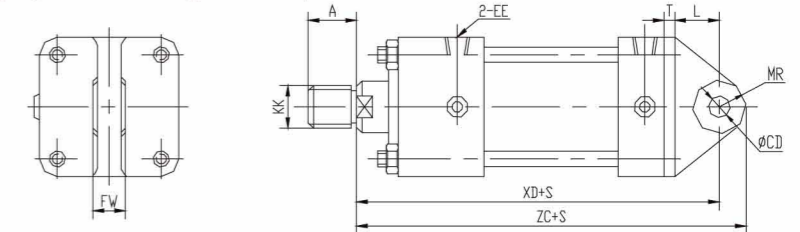
缸径 (mm)/bore (mm)		40	50	63	80	100	125	140	150	160	
受压面积 pressed areas (cm <sup>2</sup> )	无杆腔/None-rod chamber	12.5	19.6	31.1	50.2	78.5	122.7	153	176.7	201.0	
	有杆腔/Rod chamber	B型 B type	8.6	13.4	21.2	34.3	54.8	84.3	103	119.9	137.4
		C型 C type	10	15.6	25.0	40.3	62.6	99	124.8	143.6	162.6
速度比/speed ratio	B型 B type	1.45	1.46	1.47	1.46	1.43	1.45	1.48	1.47	1.46	
	C型 C type	1.25	1.25	1.25	1.25	1.25	1.24	1.22	1.23	1.23	

### YGB基本型/Standard type



缸径/Bore		40	50	63	80	100	125	140	150	160	
代号/Code	B型	A	30	35	45	60	75	95	110	115	120
	B type	KK	M20X1.5	M24X1.5	M30X1.5	M39X1.5	M48X1.5	M64X2	M72X2	M76X2	M80X2
		MM	22	28	35	45	55	70	80	85	90
活塞杆 径类型 Piston rod size	C型 C type	A	25	30	35	45	60	75	80	85	95
		KK	M16X1.5	M20X1.5	M24X1.5	M30X1.5	M39X1.5	M48X1.5	M56X2	M60X2	M64X2
		MM	18	22	28	35	45	55	60	65	70
BB		11	11	13	16	18	21	22	25	25	
DD		M10X1.25	M10X1.25	M12X1.5	M16X1.5	M18X1.5	M22X1.5	M24X1.5	M27X1.5	M27X1.5	
E		65	75	90	110	135	165	185	196	210	
EE		ZG3/8"	ZG1/2"	ZG1/2"	ZG3/4"	ZG3/4"	ZG1"	ZG1"	ZG1"	ZG1"	
LL		141	155	163	184	192	220	230	240	253	
P		90	98	102	108	113	128	135	142	152	
R		45	52	63	80	102	122	138	148	160	
W		30	30	35	35	40	45	50	50	55	
YP		38	42	46	56	58	67	69	71	74	
L		10	10	10	10	10	10	10	10	10	
d	B型/B type	40	46	55	65	80	95	105	110	115	
	C型/C type	36	40	46	55	65	80	85	90	95	

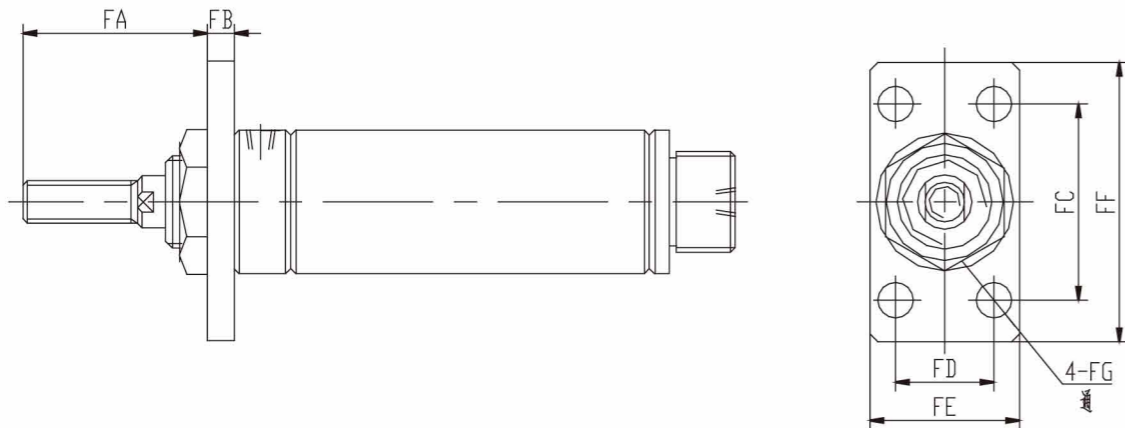
### S型（尾部单耳式）/S type(rod end single clevis)



缸径/Bore		40	50	63	80	100	125	140	150	160
代号/Code	ΦCDH9	16	20	31.5	31.5	40	50	63	63	71
	FWd11	25	31.5	40	40	50	63	80	80	80
	L	28	33	48	55	65	77	95	95	107
	MR	16	20	31.5	31.5	40	50	63	63	71
	T	10	12	14	17	19	23	25	27	30
	XD	209	230	260	291	316	365	400	412	445
	ZC	225	250	291.5	322.5	356	415	463	475	516

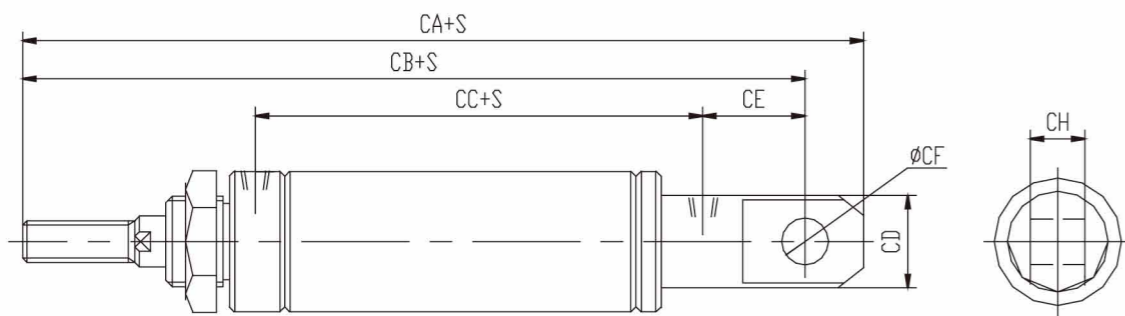
注：其它尺寸参照基本型/Note: other dimensions are same as standard

### FA型/ FA type



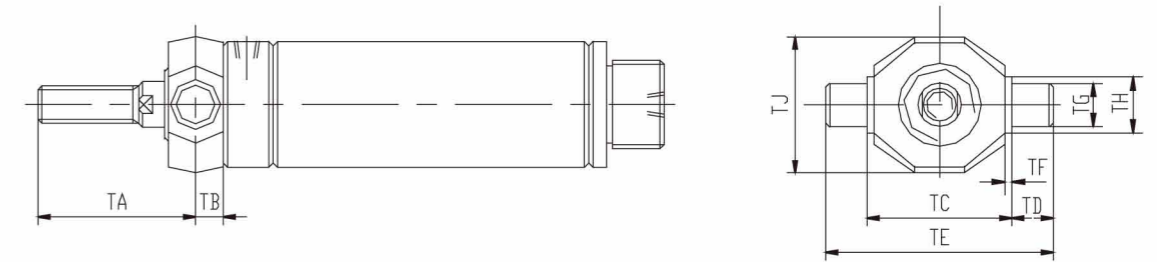
代号/Code	FA型/FA type						
缸径/Bore	FA	FB	FC	FD	FE	FF	FG
Φ20	45	6	50	25	38	66	9
Φ25	45	6	50	25	38	66	9
Φ32	49	9	55	25	38	71	9

### CA型/ CA type



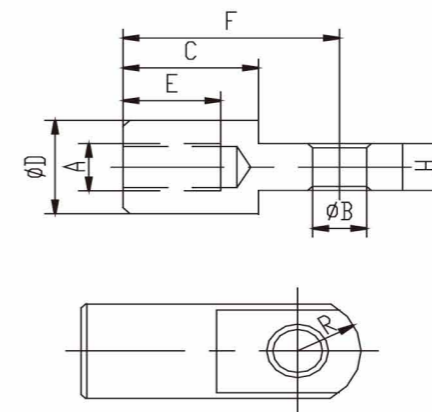
代号/Code	CA型/CA type						
缸径/Bore	CA	CB	CC	CD	CE	CF	CG
Φ20	162	152	73	18	20	8	10
Φ25	170	157	73	22	25	10	12
Φ32	184	169	76	26	27	12	14

### TA型/ TA type



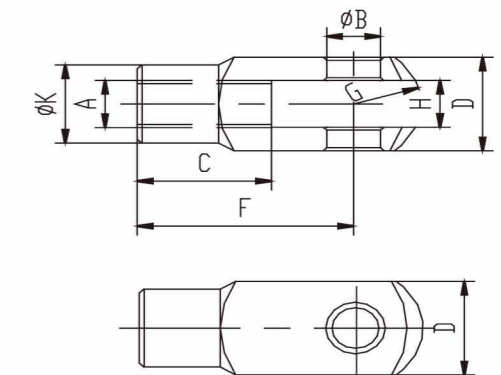
代号/Code	TA型/TA type								
缸径/Bore	TA	TB	TC	TD	TE	TF	TG	TH	TJ
Φ20	43.5	7.5	36	10	56	1	Φ10	Φ13	34
Φ25	43.5	7.5	36	10	56	1	Φ10	Φ13	34
Φ32	50.0	8.0	42	12	66	1	Φ12	Φ14	39

### T型/ T type



代号/Code	T,Y型/T,Y type									
缸径/Bore	A	B	C	D	E	F	G	H	K	R
Φ20	M8×1	8	20	16	14	32	SR13	8	14	10
Φ25	M10×1.25	10	25	20	17.5	40	SR15	10	18	12
Φ32	M12×1.25	12	30	24	21	48	SR18	12	20	14

### Y型/ Y type



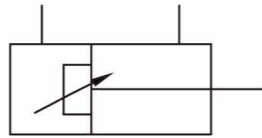
## YG系列油缸 YG series hydraulic cylinders

### 用途与特征/Applications and features

本产品可与采用日本JISB8354-1992标准安装形式及尺寸的油缸直接互换使用。结构紧凑而简单，与其它同等压力级油缸比体积小，安装形式多样而容易变换，易装易拆，活塞杆镀硬铬，单边铬层厚度为0.03~0.05mm。广泛应用于冶金、矿山、工程、轻化、纺织等机械。零件“三化”程度高，配件及维修方便。

The YG series hydraulic cylinders could be displaced by the hydraulic cylinder that was designed by Japanese JISB8354-1992 standard. The features of YGA series hydraulic cylinders are simple in structure, the smaller volume than the other same pressure level hydraulic cylinders. Various mounting mode and easy in changed. The piston rod is plated hard chromium. The hard chromium thickness is 0.03~0.05mm each side. It is widely used in metallurgical, mining, engineering, light chemistry, textile machinery etc. Parts highly in standardization and easy in maintenance.

### 图形符号/Drawing symbol:



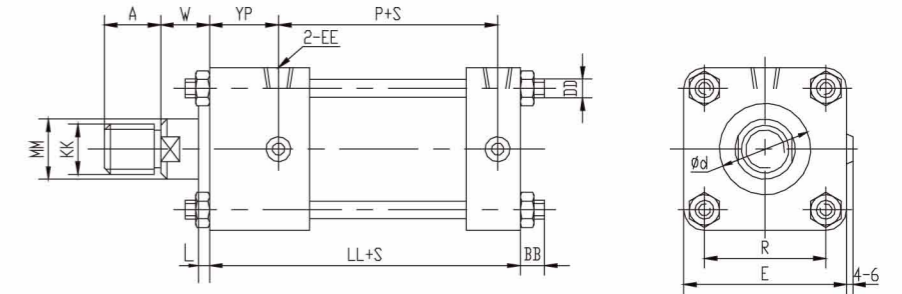
### 技术参数/ Technical Parameter:

油缸型号/Hydraulic cylinder model	YGB、YGB-L、YGC、YGC-L		
使用压力/Working pressure	7、14 MPa		
耐压/ Experiment pressure	21 MPa		
最低启动压力/ The min. start pressure	<0.3 MPa		
使用温度/Working temperature	-10°C~+80°C		
允许最大速度/Allowed max. speed	300mm/s		
效率/ Efficiency	>90%		
传动介质/Transmission medium	常规矿物液压油/General mineral hydraulic oil		
缸径/Cylinder bore	40、50、63	80、100、125	140、150、160
最大行程(mm)/Max. stroke (mm)	500	1200	2000

### 油缸有效受压面积/The effective pressed areas of hydraulic cylinder

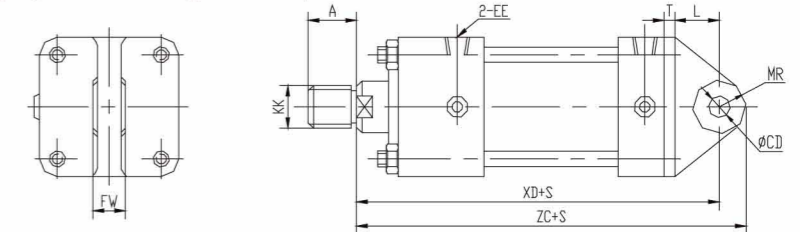
缸径 (mm)/bore (mm)		40	50	63	80	100	125	140	150	160	
受压面积 pressed areas (cm <sup>2</sup> )	无杆腔/None-rod chamber	12.5	19.6	31.1	50.2	78.5	122.7	153	176.7	201.0	
	有杆腔/Rod chamber	B型 B type	8.6	13.4	21.2	34.3	54.8	84.3	103	119.9	137.4
		C型 C type	10	15.6	25.0	40.3	62.6	99	124.8	143.6	162.6
速度比/speed ratio	B型 B type	1.45	1.46	1.47	1.46	1.43	1.45	1.48	1.47	1.46	
	C型 C type	1.25	1.25	1.25	1.25	1.25	1.24	1.22	1.23	1.23	

### YGB基本型/Standard type



缸径/Bore		40	50	63	80	100	125	140	150	160	
代号/Code	B型	A	30	35	45	60	75	95	110	115	120
	B type	KK	M20X1.5	M24X1.5	M30X1.5	M39X1.5	M48X1.5	M64X2	M72X2	M76X2	M80X2
		MM	22	28	35	45	55	70	80	85	90
活塞杆 径类型 Piston rod size	C型 C type	A	25	30	35	45	60	75	80	85	95
		KK	M16X1.5	M20X1.5	M24X1.5	M30X1.5	M39X1.5	M48X1.5	M56X2	M60X2	M64X2
		MM	18	22	28	35	45	55	60	65	70
BB		11	11	13	16	18	21	22	25	25	
DD		M10X1.25	M10X1.25	M12X1.5	M16X1.5	M18X1.5	M22X1.5	M24X1.5	M27X1.5	M27X1.5	
E		65	75	90	110	135	165	185	196	210	
EE		ZG3/8"	ZG1/2"	ZG1/2"	ZG3/4"	ZG3/4"	ZG1"	ZG1"	ZG1"	ZG1"	
LL		141	155	163	184	192	220	230	240	253	
P		90	98	102	108	113	128	135	142	152	
R		45	52	63	80	102	122	138	148	160	
W		30	30	35	35	40	45	50	50	55	
YP		38	42	46	56	58	67	69	71	74	
L		10	10	10	10	10	10	10	10	10	
d	B型/B type	40	46	55	65	80	95	105	110	115	
	C型/C type	36	40	46	55	65	80	85	90	95	

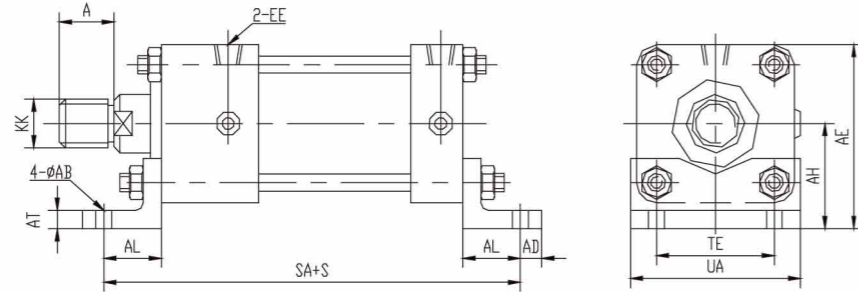
### S型（尾部单耳式）/S type(rod end single clevis)



缸径/Bore		40	50	63	80	100	125	140	150	160
代号/Code	ΦCDH9	16	20	31.5	31.5	40	50	63	63	71
	FWd11	25	31.5	40	40	50	63	80	80	80
	L	28	33	48	55	65	77	95	95	107
	MR	16	20	31.5	31.5	40	50	63	63	71
	T	10	12	14	17	19	23	25	27	30
	XD	209	230	260	291	316	365	400	412	445
	ZC	225	250	291.5	322.5	356	415	463	475	516

注：其它尺寸参照基本型/Note: other dimensions are same as standard

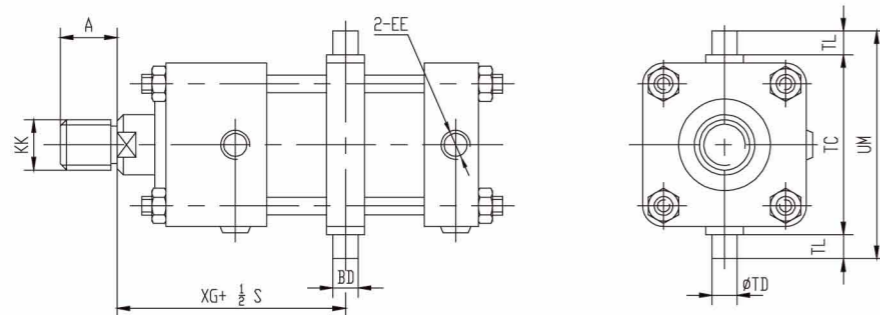
## G型 (脚架式) /G type (vertical to axis)



缸径/Bore 代号/Code	40	50	63	80	100	125	140	150	160
ΦAB	11	14	18	18	22	26	26	30	33
AH	43±0.15	50±0.15	60±0.15	72±0.15	85±0.15	105±0.15	115±0.15	123±0.15	132±0.15
AL	32	35	42	50	55	66	70	75	75
SA	205	225	247	284	302	352	370	390	403
AD	13	15	18	20	23	29	30	30	35
AT	8	8	10	12	12	15	18	18	18
TE	46	58	65	87	109	130	145	155	170
UA	69	85	98	118	150	175	195	210	225

注：其它尺寸参照基本型/Note: other dimensions are same as standard

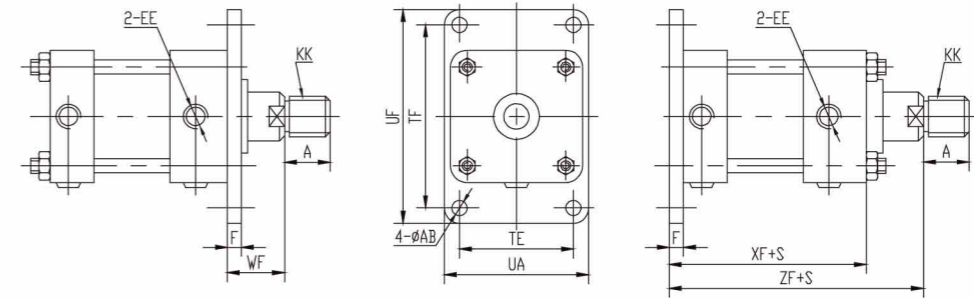
## B型 (脚架式) /B type (vertical to axis)



缸径/Bore 代号/Code	40	50	63	80	100	125	140	150	160
BD	28	33	43	43	53	58	78	78	88
TC	69 <sup>0-0.5</sup>	85 <sup>0-0.5</sup>	98 <sup>0-0.5</sup>	118 <sup>0-0.5</sup>	145 <sup>0-0.5</sup>	175 <sup>0-0.5</sup>	195 <sup>0-0.5</sup>	206 <sup>0-0.5</sup>	218 <sup>0-0.5</sup>
φTDf9	20	25	31.5	31.5	40	50	63	63	71
TL	20	25	31.5	31.5	40	50	63	63	71
UM	109	135	161	181	225	275	321	332	360
XG	113	121	132	146	156	177	188	194	207
XH	62	66	74	82	89	103	112	112	126

注：其它尺寸参照基本型/Note: other dimensions are same as standard

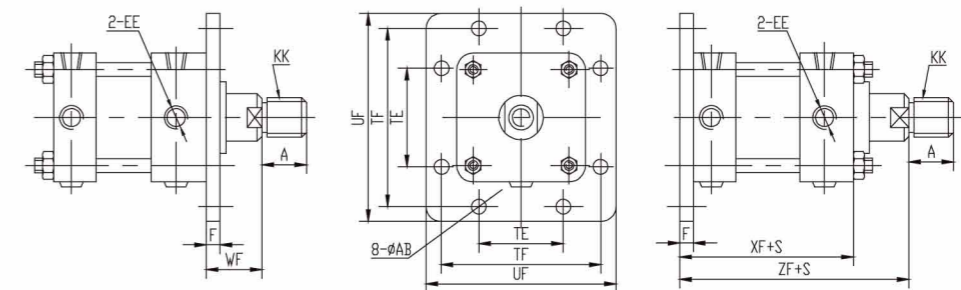
## f型 (前法兰式) /f type(head side flange) F型 (后法兰式) /F type(end side flange)



缸径/Bore 代号/Code	40	50	63	80	100	125	140	150	160
ΦAB	11	14	18	18	22	26	26	30	33
F	11	13	15	18	20	24	26	28	31
TE	46	58	65	87	109	130	145	155	170
TF	95	115	132	155	190	224	250	270	285
UA	69	85	98	118	150	175	195	210	225
UF	118	145	165	190	230	272	300	320	345
WF	41	43	50	53	60	69	76	78	86
XF	152	168	178	202	212	244	256	268	284
ZF	182	198	213	237	252	289	306	318	339

注：其它尺寸参照基本型/Note: other dimensions are same as standard

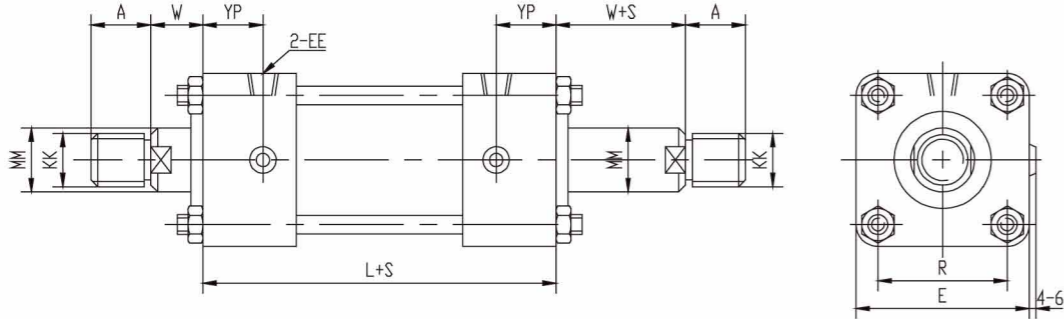
## f1型 (前法兰式) /f1 type(head side flange) F1型 (后法兰式) /F1 type(end side flange)



缸径/Bore 代号/Code	40	50	63	80	100	125	140	150	160
ΦAB	11	14	18	18	22	26	26	30	33
F	11	13	15	18	20	24	26	28	31
TE	46	58	65	87	109	130	145	155	170
TF	95	115	132	155	190	224	250	270	285
UF	118	145	165	190	230	272	300	320	345
WF	41	43	50	53	60	69	76	78	86
XF	152	168	178	202	212	244	256	268	284
ZF	182	198	213	237	252	289	306	318	339

注：其它尺寸参照基本型/Note: other dimensions are same as standard

## YGB-L, YGC-L 基本型/Standard type



缸径/Bore		40	50	63	80	100	125	140	150	160
代号/Code	A	30	35	45	60	75	95	110	115	120
	KK	M20X1.5	M24X1.5	M30X1.5	M39X1.5	M48X1.5	M64X2	M72X2	M76X2	M80X2
活塞杆径类型 Piston rod size type	MM	22	28	35	45	55	70	80	85	90
	A	25	30	35	45	60	75	80	85	95
C型 C type	KK	M16X1.5	M20X1.5	M24X1.5	M30X1.5	M39X1.5	M48X1.5	M56X2	M60X2	M64X2
	MM	18	22	28	35	45	55	60	65	70
E		65	75	90	110	135	165	185	196	210
EE		ZG3/8"	ZG1/2"	ZG1/2"	ZG3/4"	ZG3/4"	ZG1"	ZG1"	ZG1"	ZG1"
L		166	182	194	222	232	264	276	288	304
R		45	52	63	80	102	122	138	148	160
W		30	30	35	35	40	45	50	50	55
YP		38	42	46	56	58	67	69	71	74

## 订货说明/Ordering account

- \*用户可根据负载大小选择型号、缸径。
- \*行程选择，可在表中规定的范围内任意选取。
- \*因用户对行程要求不一，厂内无现货，用户必须提前订货。
- \*型号、规格标注：型号 缸径×行程 安装形式  
例如：YGC80×200-G，表示型号为YGC，缸径为80mm，行程为200mm，安装形式为G型（脚架式）的油缸。

- \*Clients can choose the cylinder's model and bore basis on your load.
- \*You can discretionarily choose the stroke in values stipulated from the tables.
- \*Because of different requirement for stroke, we had none merchandise on hand, you must be ordering ahead of schedule.
- \*Model and specification: model bore×stroke mounting mode  
Example : YGC80×200-G it is mean that the hydraulic cylinder is YGC model, bore 80mm, stroke 200mm, G type (vertical to axis) mounting mode.

## FHSG系列工程油缸 FHSG Series engineering hydraulic cylinders

### 用途与特征/Applications and features

FHSG系列双作用单杆活塞式液压缸,是液压系统中作往复直线运动的执行机构.具有结构简单、工作可靠、装拆方便、易于维修、可带缓冲装置及连接方式多样等特点.它适用于工程机械、起重运输机械、冶金机械及其他机械等。

The FHSG series double acting single rod piston cylinders are the actuator which reciprocates linearly in hydraulic system. Its features are simple in structure, reliable in operation, convenient in assemble and disassemble easy in maintenance, ect.. In addition, there are several varieties of connecting mode and can be provided with the cushioning devices.

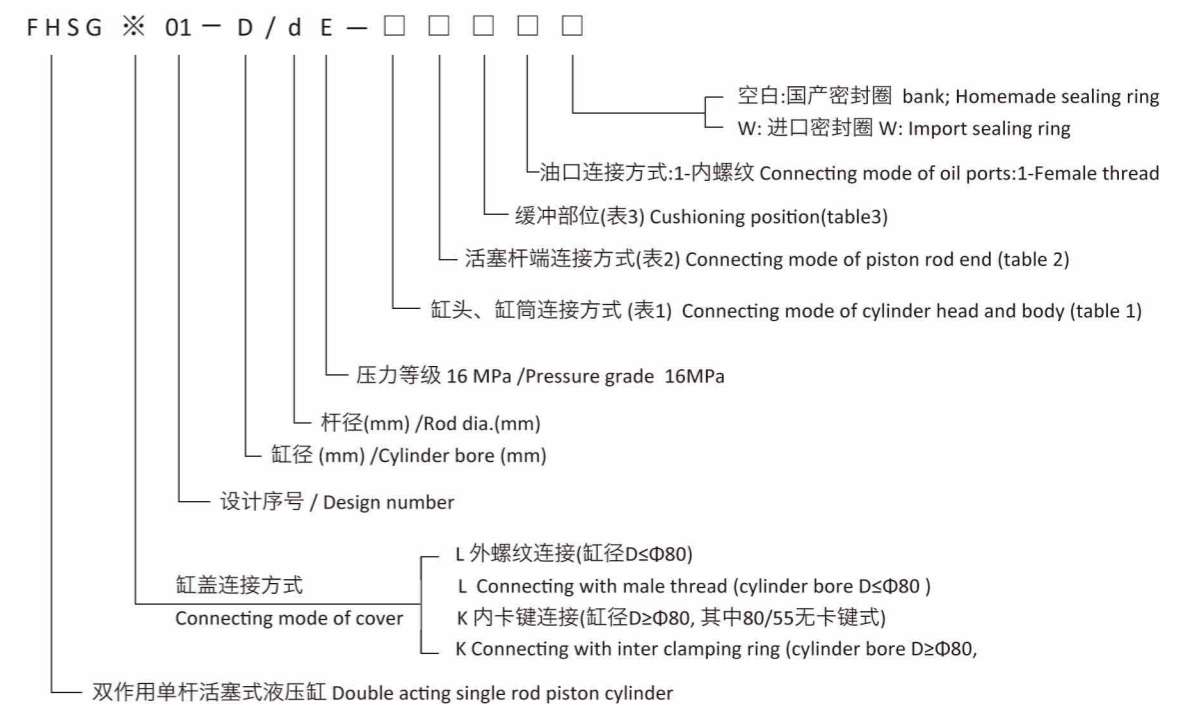
The cylinders are widely used in engineering machinery, mining machinery, lifting-transportation machinery, metallurgical machinery and other machinery.

### 技术参数/Technical Parameter:

- 工作压力: 16MPa / Working pressure: 16MPa
- 工作介质: 矿物油 / Working medium: mineral hydraulic oil
- 工作温度: -10°C~+80°C / Working temperature: -10°C~+80°C
- 运动速度: <0.5m/s, / Moving speed: <0.5m/s

注: 以上参数如有特殊要求, 请另行注明/If you have any especial requirement to the above data, please note it

### 型号说明/model mode





### 缸头\缸筒连接方式 /Connecting mode of cylinder head and body

编号/No.	连接方式/Connecting mode	备注/Remarks
1	缸头耳环带衬套/Cylinder head eye ring for bearing insertion	
2	缸头耳环装关节轴承/ Cylinder head eye ring for articulating bearing	
3	铰轴/ Trunnion	用于缸径D≥Φ80(指卡键连接)
4	端部法兰/End flange	For cylinder bore D≥Φ80
5	中部法兰/ Middle flange	(With clamping ring connecting)

### 活塞杆连接方式 / Connecting mode of piston rod end

编号No.	连接方式/Connecting mode	备注/Remarks	
1	杆端外螺纹	编号2、4、6用于缸径D≥Φ63 Cylinder bore D≥Φ63 is used for No. 2,4 and 6	
	Rod end with male thread		
2	杆端内螺纹		
	Rod end with female thread		
3	杆端外螺纹杆头耳环带衬套		
	Rod end with male threaded head & eye ring piece with bushing		
4	杆端内螺纹杆头耳环带衬套		
	Rod end with female threaded head & eye ring piece with bushing		
5	杆端外螺纹杆头耳环装关节轴承		
	Rod end with male threaded head & eye ring piece for articulating bearing insertion		
6	杆端内螺纹杆头耳环装关节轴承		
	Rod end with female threaded head & eye ring piece for articulating bearing insertion		
7	整体式活塞杆耳环带衬套		仅用于Φ40，Φ50缸径
	Monolithic piston rod combined with eye ring piece with bushing		
8	整体式活塞杆耳环装关节轴承		Only for cylinder bore Φ40，Φ50
	Monolithic piston rod combined with eye ring piece for articulating bearing insertion		

### 缓冲部位/ Cushioning position

编号/No.	连接方式/Connecting mode	备注/Remarks
1	缸头耳环带衬套/Cylinder head eye ring for bearing insertion	
2	缸头耳环装关节轴承/ Cylinder head eye ring for articulating bearing	
3	铰轴/ Trunnion	用于缸径D≥Φ80(指卡键连接)
4	端部法兰/End flange	For cylinder bore D≥Φ80
5	中部法兰/ Middle flange	(With clamping ring connecting)

### 性能参数/Specifications

型号 Model	公称压力 Nom. pressure (MPa)	缸径 Cylinder bore D(mm)	速比/Speed ratio φ						非铰轴连接的 最小行程 Min. stroke of non-trunnion connection S1(mm)
			1.33		1.46		2		
			杆径 Rod dia. d (mm)	最大行程 Max. stroke S (mm)	杆径 Rod dia. d (mm)	最大行程 Max. stroke S (mm)	杆径 Rod dia. d (mm)	最大行程 Max. stroke S (mm)	
FHSGL01-40/dE	16	40	20	320	22	400	25	480	
FHSGL01-50/dE		50	25	400	28	500	32	600	
FHSGL01-63/dE		63	32	500	35	630	45	750	
FHSGL01-80/dE		80	40	640	45	800	55	950	
FHSGK01-80/dE		80	40	640	45	800	/	/	30
FHSGK01-90/dE		90	45	720	50	900	63	1080	40
FHSGK01-100/dE		100	50	800	55	1000	70	1200	40
FHSGK01-110/dE		110	55	880	63	1100	80	1320	45
FHSGK01-125/dE		125	63	1000	70	1250	90	1500	35
FHSGK01-140/dE		140	70	1120	80	1400	100	1680	50
FHSGK01-150/dE		150	75	1200	85	1500	105	1800	55
FHSGK01-160/dE		160	80	1280	90	1600	110	1900	45
FHSGK01-180/dE		180	90	1450	100	1800	125	2150	45
FHSGK01-200/dE		200	100	1600	110	2000	140	2400	50
FHSGK01-220/dE		220	110	1760	125	2200	160	2640	50
FHSGK01-250/dE		250	125	2000	140	2500	180	3000	60

注: 1. 速比φ: 系指活塞有效面积与活塞杆腔有效面积之比.

2. 最大行程原则上是: φ=1.33时, S=8D (缸径)

φ=1.46时, S=10D (缸径)

φ=2时, S=12D (缸径)

3. 用户所需S>表内最大行程时,应通过双方协商解决.

4. 铰轴和中法兰连接的最小行程按表5,6,7,8选定.

Notes: 1.The speed ratio φ mains the ratio of the effective areas of piston to that of the piston rod chamber.

2.In principle, the max. stroke S: when φ=1.33, S=8D (cylinder bore)

when φ=1.46, S=10D (cylinder bore)

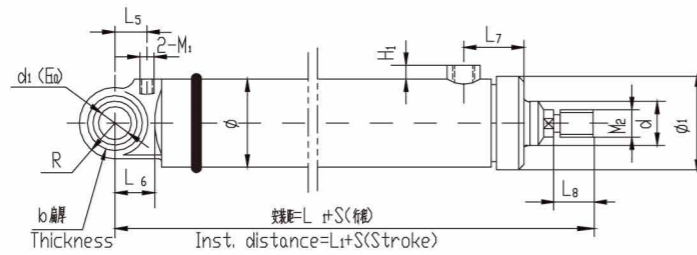
when φ=2, S=12D (cylinder bore)

3. To meet the customers need, when S>the values stipulated in the table, it should be fixed through negotiation.

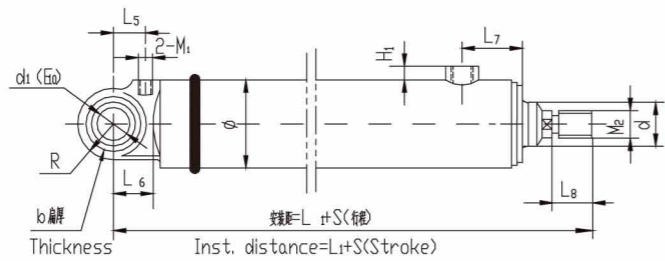
4. As for the min. stroke for trunnion and middle flange connection, please use the values in table 5,6,7 and 8.

### 外形安装连接尺寸/Installing and connecting dimensions

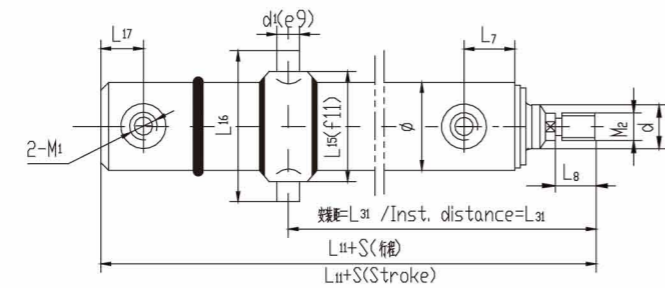
#### 1. 活塞杆端为外螺纹连接 /The piston end rod with male thread connection



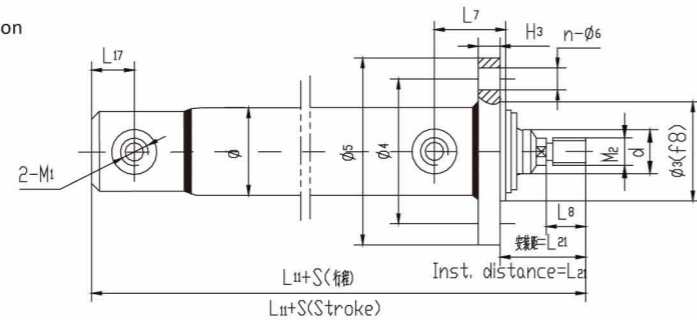
1. 耳环连接/Eyering connection
2. 耳环连接/Eyering connection



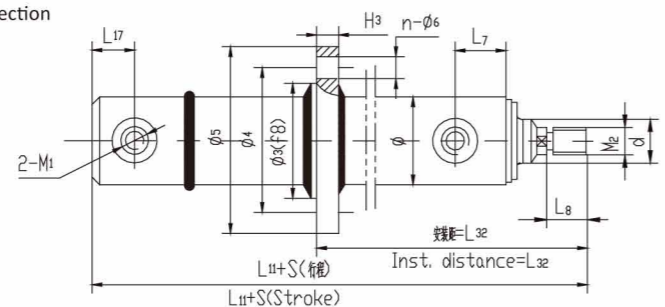
#### 3. 铰轴连接/Trunnion connection



#### 4. 端部法兰连接/End flange connection



#### 5. 中部法兰连接/Middle flange connection



### 活塞杆端为外螺纹连接的安装连接尺寸

### Installing and connecting dimensions of the piston end rod with male thread connection

表5/Table 5

缸径 Bore D(mm)	Φ	d			d <sub>1</sub>	R	b	L <sub>6</sub>	M <sub>2</sub>	L <sub>8</sub>	L <sub>5</sub>	L <sub>7</sub>	L <sub>1</sub> +S	2-M <sub>1</sub>	H <sub>1</sub>	Φ <sub>1</sub>
		速比/Speed ratio														
		1.33	1.46	2												
40	50	20	22	※25	20或/or GE20ES	25	30	M16X1.5	30	30		225+S	M14X1.5		65	
50	60	25	28	※32	30或/or GE30ES	35	40	M22X1.5	35	40	65	243+S	M18X1.5	15	75	
63	76	32	35	45				M27X1.5	40			258+S			90	
80	95	40	45	55	40或/or GE40ES	45	50	M33X1.5	45	50	75 △65	300+S	M22X1.5	18	100	
90	108	45	50	63				M36X2			66 ▲76	305+S △325+S				
100	114	50	55	70	50或/or GE50ES	60	65	M42X2	50	60	72 ▲82	340+S ▲360+S	M27X2	20		
110	130	55	63	80				M48X2	55	60	77 ▲87	360+S ▲380+S				
125	146	63	70	90				M52X2	60		78	370+S				
140	168	70	80	100	60或/or GE60ES	70	75	M60X2	65	70	85 ▲95	405+S ▲425+S	M33X2	22		
150	180	75	85	105				M64X2	70	75	92 ▲102	420+S ▲440+S				
160	194	80	90	110				M68X2	75	80	100	435+S				
180	219	90	100	125	70或/or GE70ES	80	85	M76X3	85	89	107	480+S			24	
200	245	100	110	140	80或/or GE80ES	95	90	M85X3	95	100	110	510+S				
220	273	110	125	160	90或/or GE90ES	105	100	M95X3	105	110	120	560+S	M42X2	25		
250	299	125	140	180	100或/or GE100ES	120	110	M105X3	115	122	135	614+S				

缸径/Bore D(mm)	L <sub>15</sub>	L <sub>16</sub>	L <sub>11</sub> +S	L <sub>17</sub>	Φ3	Φ4	Φ5	H <sub>3</sub>	L <sub>21</sub>	n-Φ6	L <sub>31</sub>	L <sub>32</sub>	S
80	125	185	275+S	25	115	145	175		81	8-φ13.5	215<160+S	200<190+S	55
90	140	200	280+S ▲300+S	25	130	160	190	20	82 ▲92	8-φ15.5	225<165+S	210<195+S	60
100	155	230	310+S ▲330+S	30	145	180	210		88 ▲98	8-φ18	250<170+S	230<210+S	80
110	170	245	330+S ▲350+S	30	160	195	225	22	95 ▲105	8-φ18	260<190+S	240<225+S	70
125	185	260	340+S	30	175	210	240		98	10-φ18	255<200+S	235<240+S	55
140	200	290	370+S ▲390+S	35	190	225	260	24	108 ▲118	10-φ20	290<210+S	265<250+S	80
150	215	305	385+S ▲405+S	35	205	245	285	26	114 ▲124	10-φ22	305<225+S	285<265+S	80
160	230	320	400+S	35	220	260	300	28	119	10-φ22	310<240+S	290<280+S	70
180	255	360	440+S	42	245	285	325	30	130	10-φ24	345<225+S	320<300+S	90
200	285	405	460+S	40	275	320	365	32	143	10-φ26	365<265+S	340<315+S	100
220	320	455	503+S	53	305	355	405	34	156	10-φ29	395<285+S	365<340+S	100
250	350	500	547+S	55	330	390	450	36	171	12-φ32	430<315+S	395<375+S	105

注: 1.带▲者仅为速比 φ=2时的连接尺寸。

2.带※者速比为1.7

3.带△者仅为Φ80缸卡键式尺寸。

4.铰轴连接的行程不得小于表中最小行程S1值

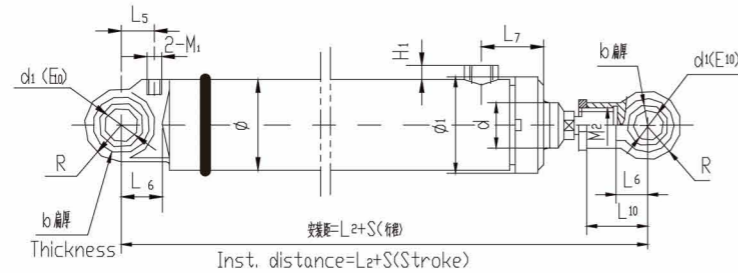
Notes: 1.The connecting dimensions for ▲ are only used for speed ratio φ=2.

2.The speed ratio for ※ is 1.7.

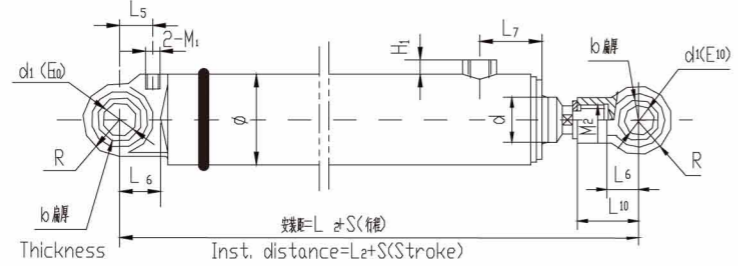
3. The dimension for △ is only used for the clamping ring cylinder bore Φ80.

4. The stroke for trunnion connection should not less than S1.

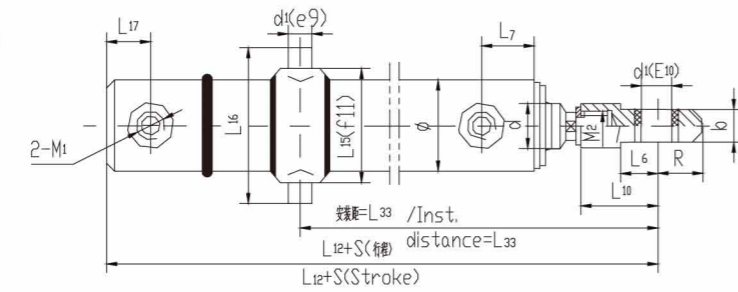
### 2. 活塞杆端为外螺纹杆头耳环连接 /The piston end rod with male thread and eye ring connection



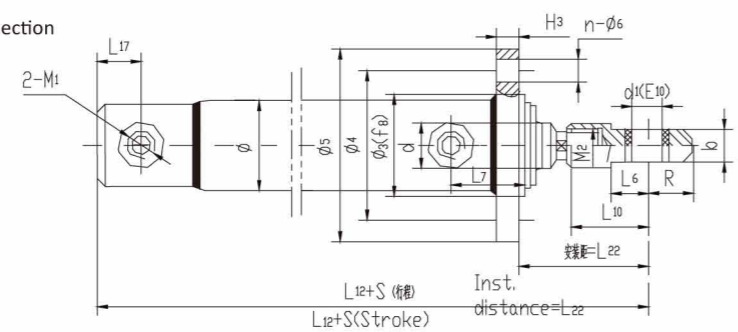
1. 耳环连接/Eyering connection
2. 耳环连接/Eyering connection



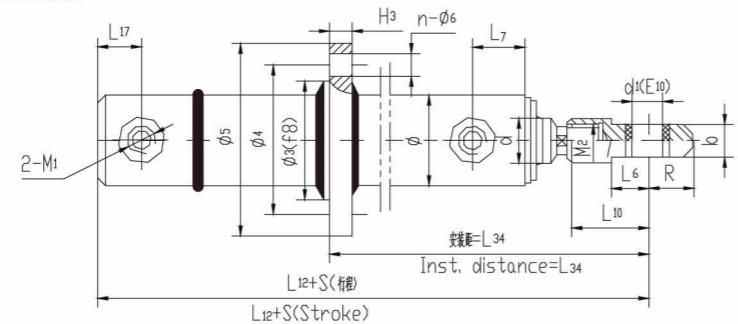
3. 铰轴连接/Trunnion connection



4. 端部法兰连接/End flange connection



5. 中部法兰连接/Middle flange connection



### 活塞杆端为外螺纹杆头耳环连接的安装连接尺寸

### Installing and connecting dimensions of the piston rod end with male thread and eye ring connection

表6/Table 6

缸径 Bore D(mm)	Φ	d			d <sub>1</sub>	R	b	L <sub>6</sub>	M <sub>2</sub>	L <sub>10</sub>	L <sub>5</sub>	L <sub>7</sub>	L <sub>2</sub> +S	2-M <sub>1</sub>	H <sub>1</sub>	Φ <sub>1</sub>
		速比/Speed ratio														
		1.33	1.46	2												
40	50	20	22	※25	20或/or GE20ES	25	30	M16X1.5	50	30		255+S	M14X1.5		65	
50	60	25	28	※32	30或/or GE30ES	35	40	M22X1.5	60	40	65	280+S	M18X1.5	15	75	
63	76	32	35	45				M27X1.5	65			295+S			90	
80	95	40	45	55	40或/or GE40ES	45	50	M33X1.5	80	50	75 △65	347+S	M22X1.5	18	100	
90	108	45	50	63				M36X2	95		66 ▲76	357+S △377+S				
100	114	50	55	70	50或/or GE50ES	60	65	M42X2	110	60	72 ▲82	402+S ▲422+S	M27X2	20		
110	130	55	63	80				M48X2	115		77 ▲87	422+S ▲442+S				
125	146	63	70	90				M52X2	140		78	452+S				
140	168	70	80	100	60或/or GE60ES	70	75	M60X2	155	70	85 ▲95	498+S ▲518+S	M33X2	22		
150	180	75	85	105				M64X2	160	75	92 ▲102	513+S ▲533+S				
160	194	80	90	110				M68X2	170	80	100	533+S				
180	219	90	100	125	70或/or GE70ES	80	85	M76X3	190	89	107	588+S			24	
200	245	100	110	140	80或/or GE80ES	95	90	M85X3	210	100	110	628+S				
220	273	110	125	160	90或/or GE90ES	105	100	M95X3	230	110	120	690+S	M42X2	25		
250	299	125	140	180	100或/or GE100ES	120	110	M105X3	250	122	135	754+S				

缸径/Bore D(mm)	L <sub>15</sub>	L <sub>16</sub>	L <sub>12</sub> +S	L <sub>17</sub>	Φ3	Φ4	Φ5	H <sub>3</sub>	L <sub>22</sub>	n-Φ6	L <sub>33</sub>	L <sub>34</sub>	S
80	125	185	322+S	25	115	145	175		128	8-φ13.5	260<205+S	245<235+S	55
90	140	200	332+S ▲352+S		130	160	190	20	134 ▲144	8-φ15.5	275<215+S	260<245+S	60
100	155	230	372+S ▲392+S		145	180	210		150 ▲160	8-φ18	310<230+S	290<270+S	80
110	170	245	392+S ▲412+S	30	160	195	225	22	157 ▲167	8-φ18	320<250+S	300<285+S	70
125	185	260	422+S		175	210	240		180	10-φ18	335<280+S	315<320+S	55
140	200	290	463+S ▲483+S		190	225	260	24	201 ▲211	10-φ20	385<305+S	360<345+S	80
150	215	305	478+S ▲498+S	35	205	245	285	26	207 ▲217	10-φ22	400<320+S	380<360+S	80
160	230	320	498+S		220	260	300	28	217	10-φ22	410<340+S	390<380+S	70
180	255	360	548+S	42	245	285	325	30	238	10-φ24	455<365+S	430<410+S	90
200	285	405	578+S	40	275	320	365	32	261	10-φ26	485<385+S	460<435+S	100
220	320	455	633+S	53	305	355	405	34	285	10-φ29	525<415+S	495<470+S	100
250	350	500	687+S	55	330	390	450	36	311	12-φ32	570<455+S	535<515+S	105

注: 1.带▲者仅为速比φ=2时的连接尺寸。

2.带※者速比为1.7

3.带△者仅为Φ80缸卡键式尺寸。

4.铰轴连接的行程不得小于表中最小行程S1值

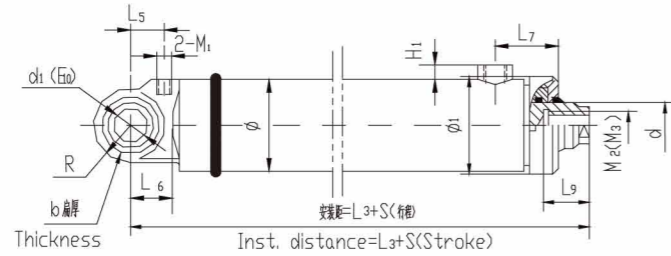
Notes: 1.The connecting dimensions for ▲ are only used for speed ratio φ=2.

2.The speed ratio for ※ is 1.7.

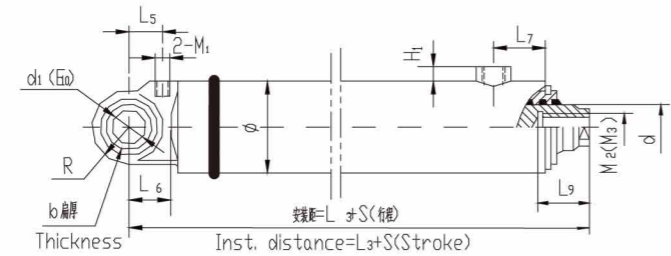
3. The dimension for △ is only used for the clamping ring cylinder bore Φ80.

4. The stroke for trunnion connection should not less than S1.

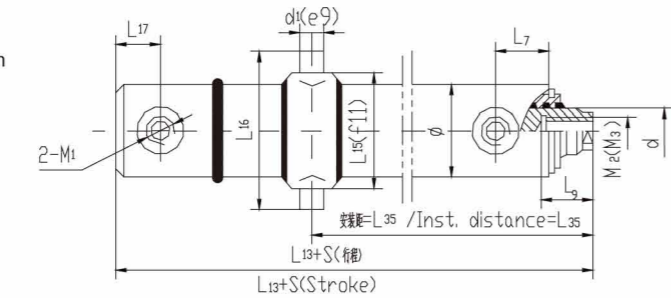
### 3. 活塞杆端为内螺纹连接 / The piston end rod with female thread connection



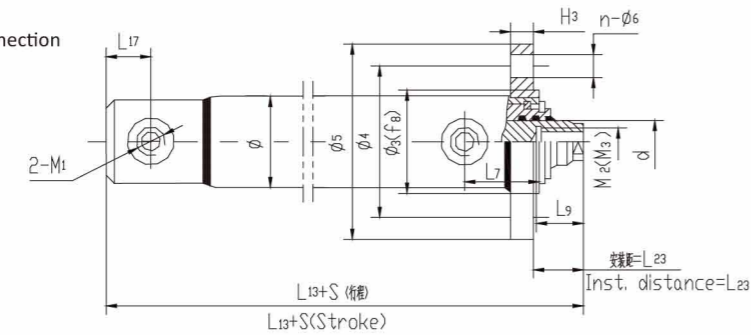
#### 1. 耳环连接/Eyering connection



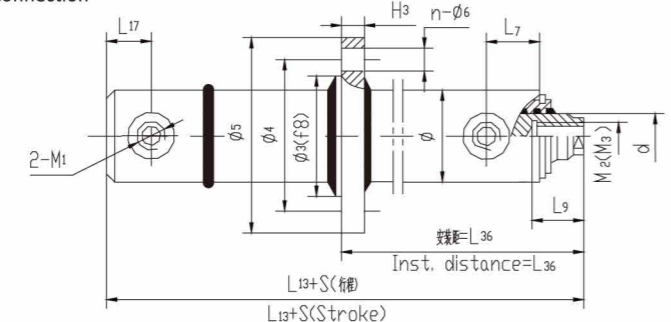
#### 3. 铰轴连接/Trunnion connection



#### 4. 端部法兰连接/End flange connection



#### 5. 中部法兰连接/Middle flange connection



### 活塞杆端为内螺纹连接的安装连接尺寸

### Installing and connecting dimensions of the piston end rod with female thread connection

表7/Table 7

缸径 Bore D(mm)	Φ	d			d <sub>1</sub>	R	b	L <sub>6</sub>	M <sub>2</sub>	M <sub>3</sub>	L <sub>9</sub>	L <sub>5</sub>	L <sub>7</sub>	L <sub>3</sub> +S	2-M <sub>1</sub>	H <sub>1</sub>	Φ <sub>1</sub>
		速比/Speed ratio															
		1.33	1.46	2													
63	76	32	35	45	30或/or GE30ES	35	40	M27X1.5	M24X1.5	35	40	65	218+S	M18X1.5	15	90	
80	95	40	45	55	40或/or GE40ES	45	50	M33X1.5	M30X1.5	40	50	75 △65	255+S	M22X1.5	18	110	
90	108	45	50	63	50或/or GE50ES	60	65	M36X2	M33X1.5	50	60	66 ▲76	260+S ▲280+S	M27X2	20	25	
100	114	50	55	70				M42X2	M36X2	55		72 ▲82	290+S ▲310+S				
110	130	55	63	80				M48X2	M42X2	60		77 ▲87	305+S ▲325+S				
125	146	63	70	90	60或/or GE60ES	70	75	M52X2	M48X2	65	70	78	310+S	M33X2	22	25	
140	168	70	80	100				M60X2	M52X2	70		85 ▲95	340+S ▲360+S				
150	180	75	85	105				M64X2	M56X2	75		92 ▲102	350+S ▲370+S				
160	194	80	90	110	70或/or GE70ES	80	85	M68X2	M60X2	80	80	100	360+S	M42X2	24	25	
180	219	90	100	125				M76X3	M68X2	90		89	107				395+S
200	245	100	110	140				80或/or GE80ES	95	90		95	M85X3				M76X3
220	273	110	125	160	90或/or GE90ES	105	100	105	M95X3	M85X3	110	110	120	455+S			
250	299	125	140	180	100或/or GE100ES	120	110	120	M105X3	M95X3	120	122	135	499+S			

缸径/Bore D(mm)	L <sub>15</sub>	L <sub>16</sub>	L <sub>12</sub> +S	L <sub>17</sub>	Φ3	Φ4	Φ5	H <sub>3</sub>	L <sub>23</sub>	n-Φ6	L <sub>35</sub>	L <sub>36</sub>	S
80	125	185	230+S	25	115	145	175	20	36	8-φ13.5	170<115+S	155<145+S	55
90	140	200	235+S ▲255+S	30	130	160	190		37 ▲47	8-φ15.5	180<120+S	165<150+S	60
100	155	230	260+S ▲280+S		35	145	180	210	38 ▲48	8-φ18	200<120+S	180<160+S	80
110	170	245	275+S ▲295+S	40		160	195	225	40 ▲50	8-φ18	205<135+S	185<170+S	70
125	185	260	280+S		42	175	210	240	38	10-φ18	195<140+S	175<180+S	55
140	200	290	305+S ▲325+S	44		190	225	260	24	43 ▲53	10-φ20	225<145+S	200<185+S
150	215	305	315+S ▲335+S		46	205	245	285	26	44 ▲54	10-φ22	235<155+S	215<195+S
160	230	320	325+S	48		220	260	300	28	44	10-φ22	235<165+S	215<205+S
180	255	360	355+S		50	245	285	325	30	45	10-φ24	260<170+S	235<215+S
200	285	405	365+S	52		275	320	365	32	48	10-φ26	270<170+S	245<220+S
220	320	455	398+S		54	305	355	405	34	51	10-φ29	290<180+S	260<235+S
250	350	500	432+S	55		330	390	450	36	56	12-φ32	315<200+S	280<260+S

注: 1.M2用于速比φ=1.46和φ=2; M3仅用于φ=1.33。

2.带▲者仅为速比φ=2时的连接尺寸。

3.带△者仅为Φ80缸卡键式尺寸。

4.铰轴连接的行程不得小于表中最小行程S1值

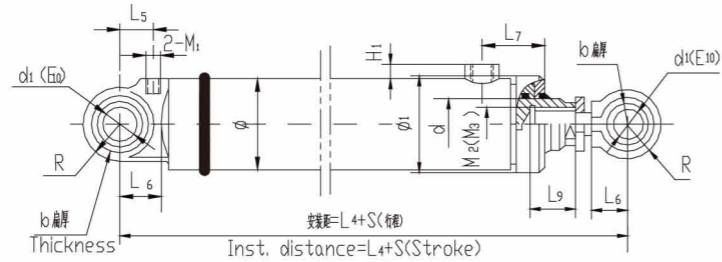
Notes: 1. M2 use for speed ratio φ=1.46 and φ=2; M3 only use for speed ratio φ=1.33.

2. The connecting dimensions for ▲ are only used for speed ratio φ=2.

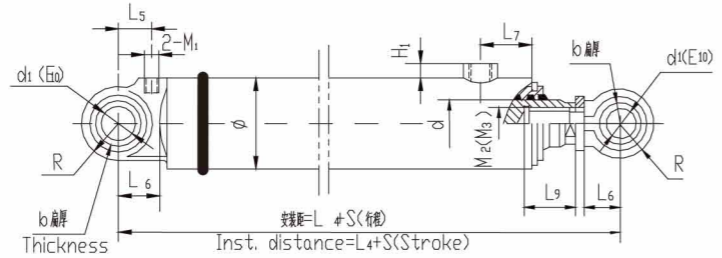
3. The dimension for △ is only used for the clamping ring cylinder bore Φ80.

4. The stroke for trunnion connection should not less than S1.

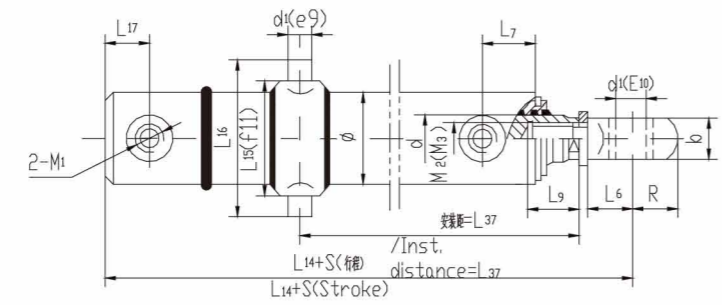
### 4. 活塞杆端为内螺纹杆头耳环连接 /The piston end rod with female thread and eye ring connection



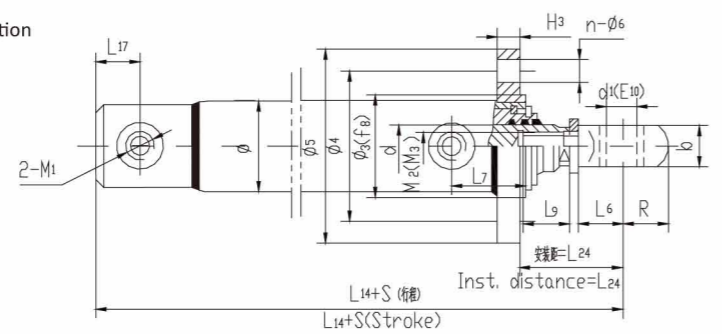
1. 耳环连接/Eyering connection



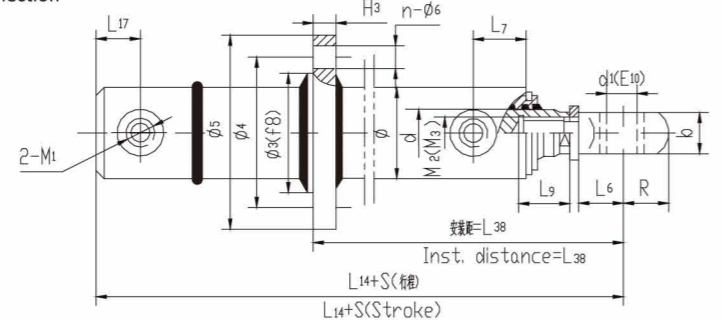
3. 铰轴连接/Trunnion connection



4. 端部法兰连接/End flange connection



5. 中部法兰连接/Middle flange connection



### 活塞杆端为内螺纹杆头耳环连接的安装连接尺寸

### Installing and connecting dimensions of the piston end rod with female thread and eye ring connection

表8/Table 8

缸径 Bore D(mm)	Φ	d 速比/Speed ratio			d <sub>1</sub>	R	b	L <sub>6</sub>	M <sub>2</sub>	M <sub>2</sub>	L <sub>9</sub>	L <sub>5</sub>	L <sub>7</sub>	L <sub>4</sub> +S	2-M <sub>1</sub>	H <sub>1</sub>	Φ <sub>1</sub>
		1.33	1.46	2													
40	50	20	22	※25	20或/or GE20ES	25	30	整体式活塞 Monolithic piston rod combined			30		218+S	M14X1.5		65	
50	60	25	28	※32	30或/or GE30ES	35	40				40	65	240+S	M18X1.5	15	75	
63	76	32	35	45				M27X1.5	M24X1.5	35			270+S			90	
80	95	40	45	55	40或/or GE40ES	45	50	M33X1.5	M30X1.5	40	50	75 △65	317+S	M22X1.5	18	100	
90	108	45	50	63				M36X2	M33X1.5	50		66 ▲76	312+S △332+S				
100	114	50	55	70				M42X2	M36X2	55		72 ▲82	357+S ▲377+S				
110	130	55	63	80	50或/or GE50ES	60	65	M48X2	M42X2	60	60	77 ▲87	372+S ▲392+S	M27X2	20		
125	146	63	70	90				M52X2	M48X2	65		78	377+S				
140	168	70	80	100				M60X2	M52X2	70	70	85 ▲95	418+S ▲438+S				
150	180	75	85	105	60或/or GE60ES	70	75	M64X2	M56X2	75	75	92 ▲102	423+S ▲440+S	M33X2	22		
160	194	80	90	110				M68X2	M60X2	80	80	100	438+S				
180	219	90	100	125	70或/or GE70ES	80	85	M76X3	M68X2	90	89	107	483+S			24	
200	245	100	110	140	80或/or GE80ES	95	90	95	M85X3	M76X3	100	100	110	513+S			
220	273	110	125	160	90或/or GE90ES	105	100	105	M95X3	M85X3	110	110	120	565+S	M42X2	25	
250	299	125	140	180	100或/or GE100ES	120	110	120	M105X3	M95X3	120	122	135	624+S			

缸径/Bore D(mm)	L <sub>15</sub>	L <sub>16</sub>	L <sub>14</sub> +S	L <sub>17</sub>	Φ3	Φ4	Φ5	H <sub>3</sub>	L <sub>24</sub>	n-Φ6	L <sub>37</sub>	L <sub>38</sub>	S
80	125	185	292+S	25	115	145	175		98	8-φ13.5	230<175+S	215<205+S	55
90	140	200	▲287+S ▲307+S		130	160	190	20	89 ▲99	8-φ15.5	230<170+S	215<200+S	60
100	155	230	▲327+S ▲347+S		145	180	210		105 ▲115	8-φ18	265<185+S	245<225+S	80
110	170	245	▲342+S ▲362+S	30	160	195	225	22	107 ▲117	8-φ18	270<200+S	250<235+S	70
125	185	260	347+S		175	210	240		105	10-φ18	260<205+S	240<245+S	55
140	200	290	▲383+S ▲403+S		190	225	260	24	121 ▲131	10-φ20	305<225+S	280<265+S	80
150	215	305	▲393+S ▲413+S	35	205	245	285	26	122 ▲132	10-φ22	315<235+S	295<275+S	80
160	230	320	403+S		220	260	300	28	122	10-φ22	315<245+S	295<285+S	70
180	255	360	443+S	42	245	285	325	30	133	10-φ24	350<260+S	325<305+S	90
200	285	405	463+S	40	275	320	365	32	146	10-φ26	370<220+S	345<320+S	100
220	320	455	508+S	53	305	355	405	34	160	10-φ29	400<290+S	370<345+S	100
250	350	500	557+S	55	330	390	450	36	181	12-φ32	440<325+S	405<385+S	105

- 注: 1.M2用于速比φ=1.46和2; M3仅用于φ=1.33。
- 2.带▲者仅为速比φ=2时的连接尺寸。
- 3.带※者速比为1.7
- 4.带△者仅为Φ80缸卡键式尺寸。
- 5.铰轴连接的行程不得小于表中最小行程S1值

- Notes: 1. M2 use for speed ratio φ=1.46 and φ=2; M3 only use for speed ratio φ=1.33.
- 2. The connecting dimensions for ▲ are only used for speed ratio φ=2.
- 3. The speed ratio for ※ is 1.7.
- 4. The dimension for △ is only used for the clamping ring cylinder bore Φ80.
- 5. The stroke for trunnion connection should not less than S1

## CD250型重载油缸

### CD250 series heavy hydraulic cylinders

#### 用途与特征/Applications and features

CD250系列双作用单活塞杆差动式液压缸，是液压系统中作往复直线运动的执行机构。具有结构简单、工作可靠、拆装方便、易于维修、可带缓冲装置及连接方式多样等特点。广泛应用于工程、建筑、锻压、机床、农业、冶金、矿山、石化、船舶、水利机械及其他重型机械等行业。

The CD250 series double acting single piston rod difference cylinders are the actuator which reciprocates linearly in hydraulic system. Its features are simple in structure, reliable in operation, convenient in assemble and disassemble easy in maintenance, etc.. In addition, there are several varieties of connecting mode and can be provided with the cushioning devices. They are widely used in fields of engineering, architectural, smithing and punch machine, agricultural, metallurgical, mining, oil chemistry shipping, water-system machinery and other heavy machinery.

#### 技术参数/Technical data

工作压力: 25MPa / Working pressure: 25MPa

工作介质: 矿物油 / Working medium: Mineral hydraulic oil

工作温度: -10°C~+80°C / Working temperature: -10°C~+80°C

运动速度: <0.5m/s, / Moving speed: <0.5m/s

注: 以上参数如有特殊要求, 请另行注明 If you have any especial requirement to the above data, please note it.

#### 型号说明/ model code

CD 250 \* \* \* \* 10 \* \* \* \* \* \*

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ (11) (12) (13)

①双作用单活塞杆式差动液压缸/Double actions single piston rod difference cylinders

②额定压力: 25MPa /Standard pressure: 25MPa

③安装方式 见表1 /Mounting styles: See table 1

④缸径/杆径 (mm) /bore/rod (mm)

⑤行程(mm)/Stroke (mm)

⑥缸筒与前、后端盖连接: A—缸筒两端法兰连接;B—前盖法兰连接、后盖焊接

Connecting mode of before and back covers: A—Connecting with flange both sides ;

B—Before cover Connecting with flange and back cover connecting by jointing.

⑦10系列:10~19系列安装尺寸相同/10 series: The mounting dimensions of 10-19 series are same.

⑧进出油口螺纹: 01—英制管螺纹; 02—公制螺纹

inlet & outlet ports thread: 01—Cannular thread 02—Standard thread

⑨活塞杆材质: C—45钢, 镀硬铬; H\*—50# 表面淬火, 镀硬铬; L—1Cr17Ni2, 镀硬铬

Piston rod material: C—45, plating hard chromium; H\*—50# Surface quenched and plating hard chromium;

L—1Cr17Ni2, plating hard chromium.

⑩活塞杆端部螺纹: G—适用于GA、GAK及SA型耳环; A—适用于GAS耳环

Piston rod end thread : G—Fitting to GA,GAK and SA eye rings; A—Fitting to GAS eye rings

## CD250型重载油缸

### CD250 series heavy hydraulic cylinders

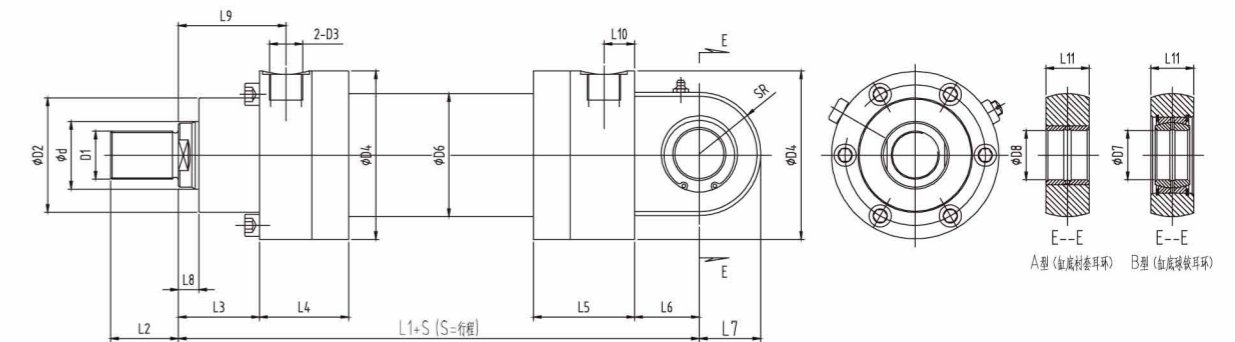
(1)缓冲: U—端部无缓冲; D—两端部有缓冲/Cushioning: U—non-cushioning; D—with cushioning both ends.

(2)工作介质: M—矿物油; / Working medium: M—hydraulic oil

(3)活塞及活塞杆密封形式: A—V形密封圈 /Piston and piston rod sealing mode: A—V series sealing rings

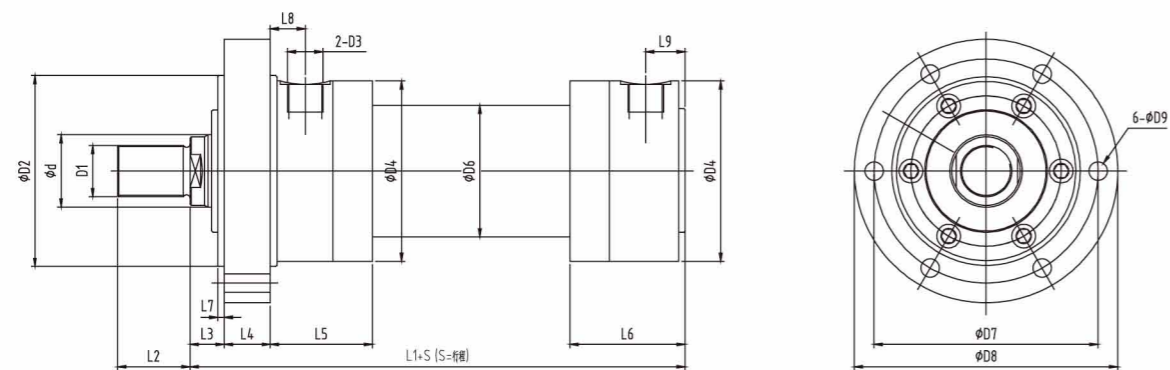
A—缸底衬套耳环/ Cylinder head eye ring for insertion	D—缸底法兰/Cylinder end flange
B—缸底球铰耳环Cylinder head eye ring for articulating bearing	E—中间耳轴安装/Middle trunnion
C—缸头法兰/ Cylinder head flange	F—底座安装/ End clevis mounting

#### CD250A,B(40~320)



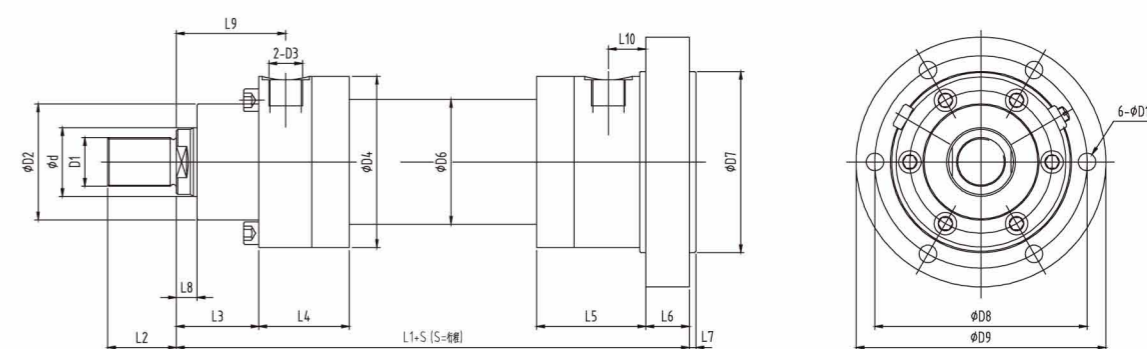
SR	27.5	32.5	40	50	62.5	65	77	88	103	115	132.5	150	170	190								
L11	23	28	30	35	40	50	55	60	65	70	80	80	90	110								
L10	20.5	20.5	22.5	32.5	32.5	35	40	40	55	40	65	65	99	100								
L9	76	80	89.5	112.5	112.5	132	145	160	175	180	220	230	270	295								
L8	17	21	25	33	33	32	37	40	40	40	27	27	35	40								
L7	27.5	32.5	40	62.5	62.5	70	82	95	113	125	142.5	160	180	200								
L6	32.5	37.5	45	60	60	70	75	85	90	115	125	140	150	175								
L5	65.5	67.5	70	95	95	100	110	120	150	185	199	205	254	265								
L4	60	60	70	90	90	100	110	120	135	170	199	205	255	265								
L3	54	58	67	85	85	97	105	120	130	135	155	165	170	195								
L2	G	16	22	28	45	45	58	65	80	110	120	120	130	---								
	A	30	35	45	75	75	95	110	120	140	150	160	190	200								
L1	252	265	302	385	385	447	490	550	610	645	750	789	884	980								
ΦD8	25	30	35	50	50	60	70	80	90	100	110	110	120	140								
ΦD7	25	30	35	50	50	60	70	80	90	100	110	110	120	140								
ΦD6	50	60	78	125	125	150	170	195	220	245	270	305	330	381								
ΦD5	40	50	63	100	100	125	140	160	180	200	220	250	280	320								
ΦD4	85	105	120	165	165	200	255	265	290	310	355	395	425	490								
D3	01	1/2"BSP	1/2"BSP	3/4"BSP	3/4"BSP	1"BSP	1 1/4"BSP	1 1/4"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP								
	02	M22X1.5	M22X1.5	M27X2	M27X2	M33X2	M42X2	M42X2	M48X2	M48X2	M48X2	M48X2	M48X2	M48X2								
ΦD2	55	68	75	95	115	135	155	180	200	215	245	280	305	340								
D1	G	M16X1.5	M22X1.5	M28X1.5	M35X1.5	M45X1.5	M58X1.5	M65X1.5	M80X1.5	M100X2	M110X2	M120X3	M120X3	---								
	A	M18X2	M24X2	M30X2	M39X3	M50X3	M64X3	M80X3	M90X3	M100X3	M110X4	M120X4	M120X4	M150X4	M160X4							
d	20	28	35	35	45	55	55	70	70	90	100	110	125	140	140	160	160	180	180	200	200	220
D	Φ40	Φ50	Φ63	Φ80	Φ100	Φ125	Φ140	Φ160	Φ180	Φ200	Φ220	Φ250	Φ280	Φ320								

## CD250C(40~320)



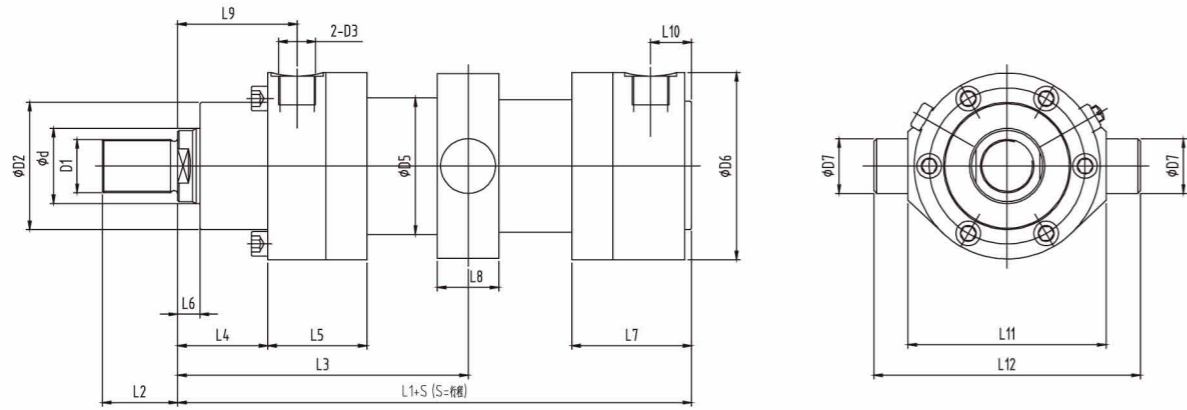
L9	27	27	27.5	30	32.5	35	45	50	55	45	75	80	109	110											
L8	27	27	27.5	26	32.5	45	50	50	55	55	75	75	110	110											
L7	5	5	5	5	5	5	10	10	10	10	10	10	10	10											
L6	72	74	75	82.5	95	100	115	130	145	190	209	215	264	275											
L5	65	65	75	72.5	90	110	120	130	145	180	209	215	265	275											
L4	30	30	35	35	45	50	50	60	70	75	85	85	95	120											
L3	19	23	27	25	35	37	45	50	50	50	60	70	65	65											
L2	G	16	22	28	35	45	58	65	80	100	110	120	130	---											
	A	30	35	45	55	75	95	110	120	140	150	160	160	190	200										
L1	226	234	262	275	325	377	420	475	515	535	635	659	744	815											
ΦD9	9	11	14	14	18	22	22	28	30	33	33	39	39	45											
ΦD8	130	160	185	200	245	295	315	385	420	445	490	555	590	680											
ΦD7	108	130	155	170	205	245	265	325	360	375	430	485	520	600											
ΦD6	50	60	78	100	125	150	170	195	220	245	270	305	330	381											
ΦD5缸径	40	50	63	80	100	125	140	160	180	200	220	250	280	320											
ΦD4	85	105	120	135	165	200	225	265	290	310	355	395	425	490											
D3	1	1/2" BSP	1/2" BSP	3/4" BSP	3/4" BSP	1" BSP	1 1/4" BSP	1 1/4" BSP	1 1/2" BSP	1 1/2" BSP	1 1/2" BSP	1 1/2" BSP	1 1/2" BSP	1 1/2" BSP											
	2	M22X1.5	M22X1.5	M27X2	M27X2	M33X2	M42X2	M42X2	M48X2	M48X2	M48X2	M48X2	M48X2	M48X2											
ΦD2	90	110	130	145	175	210	230	275	300	320	370	415	450	510											
D1	G	M16X1.5	M22X1.5	M28X1.5	M35X1.5	M45X1.5	M58X1.5	M65X1.5	M80X2	M100X2	M110X2	M120X3	M130X3	---											
	A	M18X2	M24X2	M30X2	M39X3	M50X3	M64X3	M80X3	M90X3	M100X3	M110X4	M120X4	M150X4	M160X4											
d	20	28	28	35	35	45	55	70	70	90	100	100	110	110	125	125	140	140	160	160	180	180	200	200	220
D	Φ40	Φ50	Φ63	Φ80	Φ100	Φ125	Φ140	Φ160	Φ180	Φ200	Φ220	Φ250	Φ280	Φ320											

## CD250D(40~320)



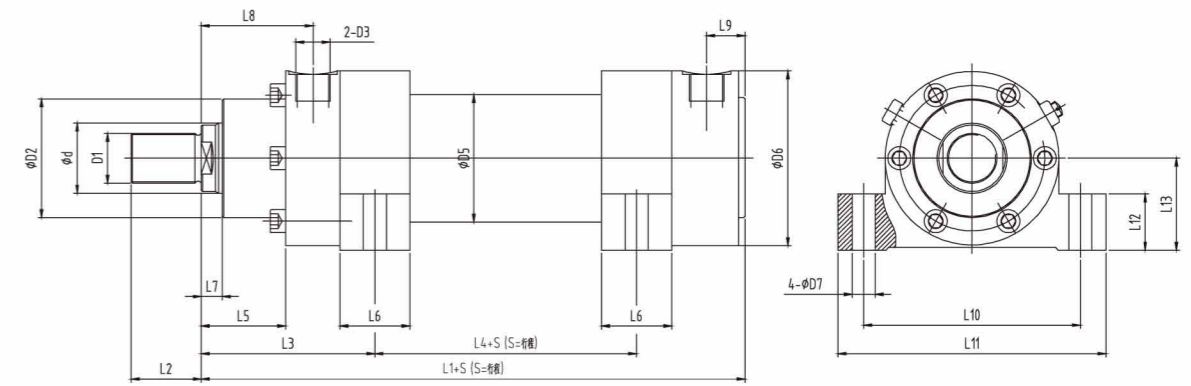
L10	27	27	27.5	35	37.5	40	50	50	55	50	75	80	109	110											
L9	76	80	89.5	86	112.5	132	145	160	175	180	220	230	270	295											
L8	17	21	25	15.5	33	32	37	40	40	40	27	27	35	40											
L7	5	5	5	5	5	5	10	10	10	10	10	10	10	10											
L6	30	30	35	35	45	50	50	60	70	75	85	85	95	120											
L5	70.5	72.5	75	82.5	95	105	117	130	145	190	209	215	264	275											
L4	60	60	70	67.5	90	100	110	120	135	170	199	205	255	265											
L3	54	58	67	65	85	97	105	120	130	135	155	165	170	195											
L2	G	16	22	28	35	45	58	65	80	100	110	120	130	---											
	A	30	35	45	55	75	95	110	120	140	150	160	160	190	200										
L1	256	264	297	315	375	432	475	535	585	615	720	744	839	935											
Φ10	9	11	14	14	18	22	22	28	30	33	33	39	39	45											
Φ9	130	160	185	200	245	295	315	385	420	445	490	555	590	680											
Φ8	108	130	155	170	205	245	265	325	360	375	430	485	520	600											
Φ7	90	110	130	145	175	210	230	275	300	320	370	415	450	510											
Φ6	50	60	78	100	125	150	170	195	220	245	270	305	330	381											
Φ5缸径	40	50	63	80	100	125	140	160	180	200	220	250	280	320											
Φ4	85	105	120	135	165	200	225	265	290	310	355	395	425	490											
D3	1	1/2" BSP	1/2" BSP	3/4" BSP	3/4" BSP	1" BSP	1 1/4" BSP	1 1/4" BSP	1 1/2" BSP	1 1/2" BSP	1 1/2" BSP	1 1/2" BSP	1 1/2" BSP	1 1/2" BSP											
	2	M22X1.5	M22X1.5	M27X2	M27X2	M33X2	M42X2	M42X2	M48X2	M48X2	M48X2	M48X2	M48X2	M48X2											
ΦD2	55	68	75	95	115	135	155	180	200	215	245	280	305	340											
D1	G	M16X1.5	M22X1.5	M28X1.5	M35X1.5	M45X1.5	M58X1.5	M65X1.5	M80X2	M100X2	M110X2	M120X3	M130X3	---											
	A	M18X2	M24X2	M30X2	M39X3	M50X3	M64X3	M80X3	M90X3	M100X3	M110X4	M120X4	M150X4	M160X4											
d	20	28	28	35	35	45	55	70	70	90	100	100	110	110	125	125	140	140	160	160	180	180	200	200	220
D	Φ40	Φ50	Φ63	Φ80	Φ100	Φ125	Φ140	Φ160	Φ180	Φ200	Φ220	Φ250	Φ280	Φ320											

CD250E(40~320)



L12	135	155	170	195	235	290	315	380	410	430	490	540	590	690
L11	95	115	130	145	175	210	230	275	300	320	370	410	450	510
L10	27	27	27.5	30	32.5	35	45	50	55	45	75	80	109	110
L9	76	80	89.5	86	112.5	132	145	160	175	180	220	230	270	295
L8	35	35	40	45	55	65	70	80	95	95	110	125	145	175
L7	72	74	75	82.5	95	100	115	130	145	190	209	215	264	275
L6	17	21	25	15.5	33	32	37	40	40	40	27	27	35	40
L5	60	60	70	67.5	90	100	110	120	135	170	199	205	255	265
L4	54	58	67	65	85	97	105	120	130	135	155	165	170	195
L3	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定	用戶指定
L2	G	16	22	28	35	45	58	65	80	100	110	120	130	---
	A	30	35	45	55	75	95	110	140	150	160	160	190	200
L1	226	234	262	275	325	377	420	475	515	535	635	659	744	815
ΦD7	30	30	35	40	50	60	65	75	85	90	100	110	130	160
ΦD6	85	105	120	135	165	200	225	265	290	310	355	395	425	490
ΦD5	50	60	78	100	125	150	170	195	220	245	270	305	330	381
ΦD4缸径	40	50	63	80	100	125	140	160	180	200	220	250	280	320
D3	1	1/2"BSP	1/2"BSP	3/4"BSP	3/4"BSP	1"BSP	1 1/4"BSP	1 1/4"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP
	2	M22X1.5	M22X1.5	M27X2	M27X2	M33X2	M42X2	M42X2	M48X2	M48X2	M48X2	M48X2	M48X2	M48X2
ΦD2	55	68	75	95	115	135	155	180	200	215	245	280	305	340
D1	G	M16X1.5	M22X1.5	M28X1.5	M35X1.5	M45X1.5	M58X1.5	M65X1.5	M80X2	M100X2	M110X2	M120X3	M120X3	M130X3
	A	M18X2	M24X2	M30X2	M39X3	M50X3	M64X3	M80X3	M90X3	M100X3	M110X4	M120X4	M120X4	M150X4
d	20	28	28	35	35	45	55	55	70	70	90	90	100	110
D	Φ40	Φ50	Φ63	Φ80	Φ100	Φ125	Φ140	Φ160	Φ180	Φ200	Φ220	Φ250	Φ280	Φ320

CD250F(40~320)

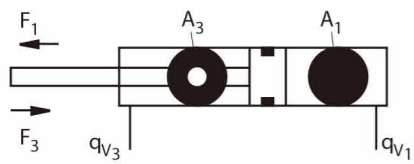


L13	45	55	65	70	85	105	115	135	150	160	185	205	225	255
L12	26	31	37	42	52	60	65	70	80	85	95	110	125	140
L11	135	155	180	210	250	305	340	400	440	465	530	600	630	730
L10	110	130	150	170	205	255	280	330	360	385	445	500	530	610
L9	27	27	27.5	30	32.5	35	45	50	55	45	75	80	109	110
L8	76	80	89.5	86	112.5	132	145	160	175	180	220	230	270	295
L7	17	21	25	15.5	33	32	37	40	40	40	27	27	35	40
L6	30	35	40	55	65	60	65	75	80	90	94	100	110	120
L5	54	58	67	65	85	97	105	120	130	135	155	165	170	195
L4	55	57	70	55	75	90	105	120	135	145	166	174	165	200
L3	106.5	110.5	127	135	165	192	207.5	232.5	250	260	307	320	370	400
L2	G	16	22	28	35	45	58	65	80	100	110	120	130	---
	A	30	35	45	55	75	95	110	140	150	160	160	190	200
L1	226	234	262	275	325	377	420	475	515	535	635	659	744	815
ΦD7	11	11	14	18	22	25	28	31	37	37	45	52	52	62
ΦD6	85	105	120	135	165	200	225	265	290	310	355	395	425	490
ΦD5	50	60	78	100	125	150	170	195	220	245	270	305	330	381
ΦD4缸径	40	50	63	80	100	125	140	160	180	200	220	250	280	320
D3	1	1/2"BSP	1/2"BSP	3/4"BSP	3/4"BSP	1"BSP	1 1/4"BSP	1 1/4"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP	1 1/2"BSP
	2	M22X1.5	M22X1.5	M27X2	M27X2	M33X2	M42X2	M42X2	M48X2	M48X2	M48X2	M48X2	M48X2	M48X2
ΦD2	55	68	75	95	115	135	155	180	200	215	245	280	305	340
D1	G	M16X1.5	M22X1.5	M28X1.5	M35X1.5	M45X1.5	M58X1.5	M65X1.5	M80X2	M100X2	M110X2	M120X3	M120X3	M130X3
	A	M18X2	M24X2	M30X2	M39X3	M50X3	M64X3	M80X3	M90X3	M100X3	M110X4	M120X4	M120X4	M150X4
d	20	28	28	35	35	45	55	55	70	70	90	90	100	110
D	Φ40	Φ50	Φ63	Φ80	Φ100	Φ125	Φ140	Φ160	Φ180	Φ200	Φ220	Φ250	Φ280	Φ320

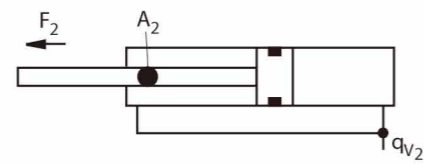


## 面积 力 流量

活塞 piston	活塞杆 Piston rod	面积比 area rati	面积比 area			力在 250 bar 时 1) Force at 250 bar 1)			流量在 0.1 米/秒时 2) Flow at 0.1 m/s 2)		
			活塞piston	活塞杆Piston rod	环形	推Pressure	差动Diff	拉Pulling	驶出Out	差动Diff	驶入in
AL	MM	$\phi$	$A_1$	$A_2$	$A_3$	$F_1$	$F_2$	$F_3$	$q_{v2}$	$q_{v2}$	$q_{v3}$
$\phi$ mm	$\phi$ mm	$A_1/A_3$	cm <sup>2</sup>	cm <sup>2</sup>	cm <sup>2</sup>	kN	kN	kN	L/min	L/min	L/min
40	22	1.43	12.56	3.80	8.76	31.40	9.50	21.90	7.5	2.3	5.3
	28	1.96		6.16	6.40		15.40	16.00		3.7	3.8
50	28	1.46	19.63	6.16	13.47	49.10	15.40	33.70	11.8	3.7	8.1
	36	2.08		10.18	9.45		25.45	23.65		6.1	5.7
63	36	1.48	31.17	10.18	20.99	77.90	25.45	52.45	18.7	6.1	12.6
	45	2.04		15.90	15.27		39.75	38.15		9.5	9.2
80	45	1.46	50.26	15.90	34.36	125.65	39.75	85.90	30.2	9.5	20.7
	56	1.96		24.63	25.63		61.55	64.10		14.8	15.4
100	56	1.46	78.54	24.63	53.91	196.35	61.55	134.80	47.1	14.8	32.3
	70	1.96		38.48	40.06		96.20	100.15		23.1	24.0
125	70	1.46	122.72	38.48	84.24	306.75	96.20	210.55	73.6	23.1	50.5
	90	2.08		63.62	59.10		159.05	147.70		38.2	35.4
140	90	1.70	153.94	63.62	90.32	384.75	159.05	225.70	92.4	38.2	54.2
	100	2.04		78.54	75.40		196.35	188.40		47.1	45.3
160	100	1.64	201.06	78.54	122.50	502.50	196.35	306.15	120.6	47.1	73.5
	110	1.90		95.06	106.00		237.65	264.85		57.0	63.6
180	110	1.60	254.47	95.06	159.43	636.17	237.65	398.52	152.6	57.0	95.7
	125	1.93		122.72	131.75		306.80	329.37		73.6	79.1
200	125	1.64	314.16	122.72	191.44	785.25	306.80	478.45	188.5	73.6	114.9
	140	1.96		153.96	160.20		384.90	400.35		92.4	96.1
220	140	1.68	380.1	153.9	226.2	950.3	384.8	565.5	228.1	92.4	135.7
	160	2.12		201.0	179.1		502.6	447.7		120.7	107.4
250	160	1.69	490.8	201.0	289.8	1227.2	502.7	724.5	294.5	120.7	173.8
	180	2.08		254.4	236.4		636.2	591.0		152.7	141.8
280	180	1.70	615.7	254.4	361.3	1539.4	636.2	903.2	269.4	152.7	216.7
	200	2.04		314.1	301.6		785.4	753.9		188.5	180.9
320	200	1.64	804.2	314.1	490.1	2010.6	785.4	1225.2	482.5	188.5	294.0
	220	1.90		380.0	424.2		950.3	1060.3		228.1	254.4



1) 理论力 Theoretical static cylinder force  
(未考虑效率) (without consideration of the efficiency)



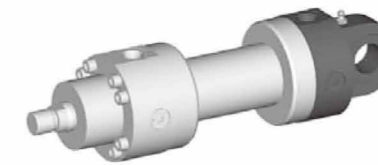
2) 运行速度 Stroke velocity

## 公差按 ISO 8135 Tolerances according to ISO 8135

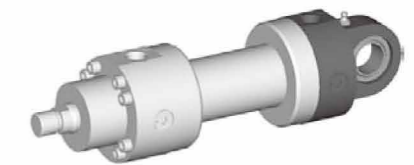
安装尺寸 Installation dimensions	WC	XC <sup>2)</sup>	XO <sup>2)</sup>	XS <sup>1),2)</sup>	XV <sup>2)</sup>	ZP <sup>2)</sup>	行程公差 stroke tolerance
安装方式 Mounting type	MF3	MP3	MP5	MS2	MT4	MF4	
行程长度 Stroke length	公差 Tolerances						
≤ 1250	± 2	± 1.5	± 1.5	± 2	± 2	± 1.5	+ 2
>1250 – ≤ 3150	± 4	± 3	± 3	± 4	± 4	± 3	+ 5
> 3150 – ≤ 8000	± 8	± 5	± 5	± 8	± 8	± 5	+ 8

1) 非标准 Not standardized 2) 包括行程长度 Including stroke length

FCDH1 MP3  
见页号/See page 6, 7



FCDH1 MP5  
见页号/See page 6, 7



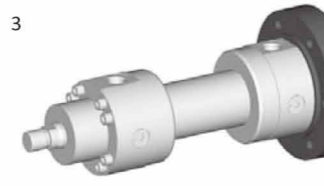
FCDH1 MF3  
见页号/See page 0,



FCGH1 MF3  
见页号/See page 0,



FCDH1 MF4  
见页号/See page 2, 3



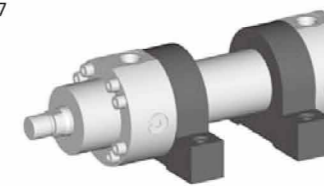
FCDH1 MT4  
见页号/See page 4, 5



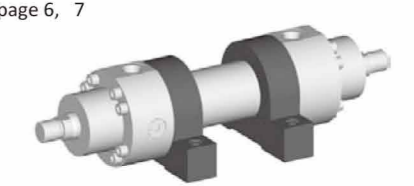
FCGH1 MT4  
见页号/See page 4, 5



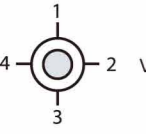
FCDH1 MS2  
见页号/See page 6, 7



FCGH1 MS2  
见页号/See page 6, 7

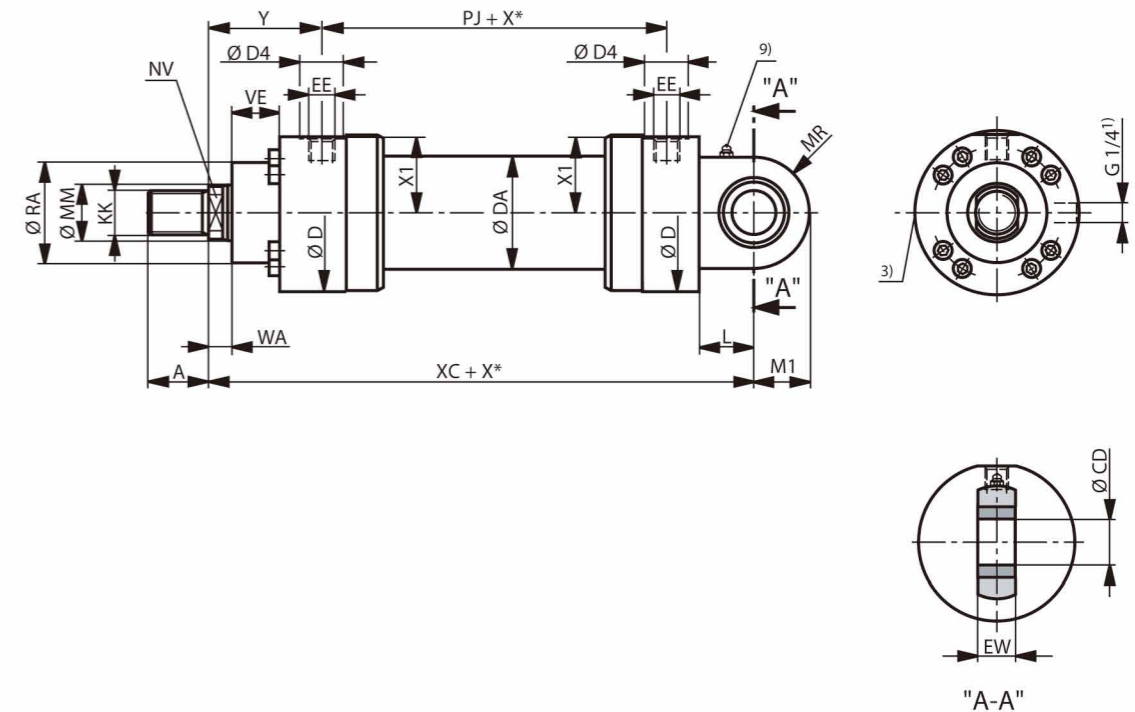




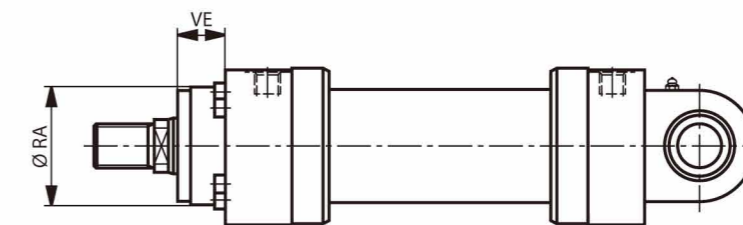
<p>Single-rod cylinder = FCD 8) = FCG</p> <p>Series = H1</p> <p><b>Mounting types</b>          Plain clevis at base 1) = MP3 1) = MP3          Self-aligning clevis at base = MP5 MP5          Round flange at head = MF3 = MF3          Round flange at base = MF4 = MF4          Trunnion 2) = MT4 2) = MT4          Foot mounting = MS2 = MS2</p> <p>Piston <math>\varnothing</math> (AL) 40 to 320 mm see page 34</p> <p>Piston rod <math>\varnothing</math> (MM) 22 to 220 mm see page 34</p> <p>Stroke length in mm</p> <p><b>Design principle</b>          Head and base flanged = A</p> <p><b>Component series</b>          10 to 19 unchanged installation and connection dimensions = 1X          Only Piston <math>\varnothing</math> (AL) 40 to 200 mm          20 to 29 unchanged installation and connection dimensions = 2X          Only Piston <math>\varnothing</math> (AL) 200 to 320 mm</p> <p><b>Line connection / version</b>          pipe thread ISO 228-1 = B          metric thread ISO 261 = M          Flange porting pattern according to ISO 6162 tab.2 (SAE 6000 PSI) 5), 10) = D          Flange porting pattern according to ISO 6164 tab.2 5) = H          pipe thread ISO 228-1 with flat pipe flange = C</p> <p><b>Line connection/location at head and base</b> = 1          = 2          = 3          = 4</p>  <p><b>Piston rod design</b>          Hard chromium-plated = C          Hardened and hard chromium-plated 3) = H          Nickel-plated and hard chromium-plated 4) = N</p>		<p><b>Option 2</b>          A= 15) free-Maintenance self-aligning bearing connection          B= flange grease nipple          C= 9) analogue output 4-20mA          F= 9) analogue output 0-10V          D= 9) digital output ssi          Y=12) enter piston rod extension LY          W= in clear text in mm without option</p> <p><b>Option 1</b>          A= screwed coupling both sides          F= 6) guide ring          E= inductive proximity switch without plug-in connector          Plug-in connector-separate order, see page 58          T=13) position measuring system (magnetostrictive)          Without plug-in connector          Plug-in connector-separate order, see page 57          W= without option</p> <p><b>Seal design</b>  <b>For mineraloil HL, HLP and HFA</b>          M = Standard seal system          T = Servo quality/reduced friction          A = Chevron seal kits          For phosphate ester HFD-R and polyol ester HFD-U          S = Servo quality/reduced friction          B = Chevron seal kits</p> <p><b>End position cushioning</b>          U = Without          D = 1) Both sides, self-adjusting          E = Both sides, adjustable</p> <p><b>Piston rod end</b>          A = Thread for self-aligning clevis CGAS          G = 11) Thread for self-aligning clevis CGA,CGAK, plain clevis CSA          S = 7) With mounted self-aligning clevis CGAS          L = 7) 11) With mounted self-aligning clevis CGA          M = 7) 11) With mounted self-aligning clevis CGAK          N = 1) 7) With mounted plain clevis CSA</p>
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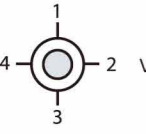
### 缸底摆动吊环 MP3/Plain clevis at base MP3

FCDH1 MP3; AL- $\varnothing$  40-200 mm



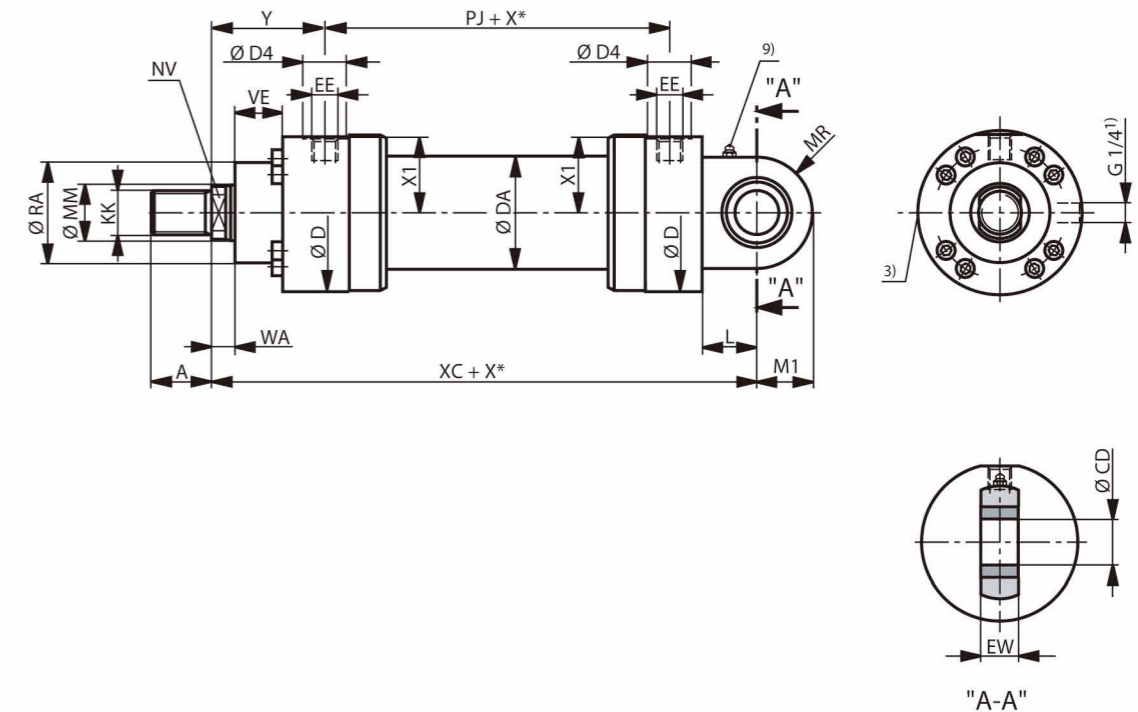
在密封款式“A”,“B”和活塞直径为160-200mm时  
 With seal design “A”, “B” and AL  $\varnothing$  160 - 320 mm



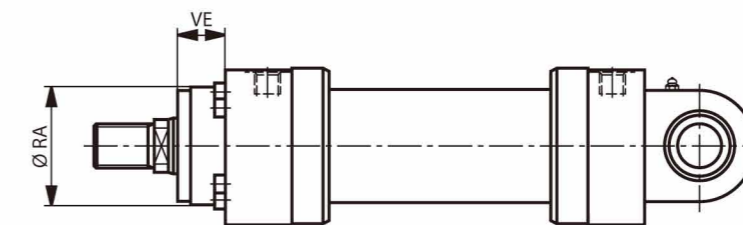
<p>Single-rod cylinder = FCD 8) = FCG</p> <p>Series = H1</p> <p><b>Mounting types</b>          Plain clevis at base 1) = MP3 1) = MP3          Self-aligning clevis at base = MP5 MP5          Round flange at head = MF3 = MF3          Round flange at base = MF4 = MF4          Trunnion 2) = MT4 2) = MT4          Foot mounting = MS2 = MS2</p> <p>Piston <math>\varnothing</math> (AL) 40 to 320 mm see page 34</p> <p>Piston rod <math>\varnothing</math> (MM) 22 to 220 mm see page 34</p> <p>Stroke length in mm</p> <p><b>Design principle</b>          Head and base flanged = A</p> <p><b>Component series</b>          10 to 19 unchanged installation and connection dimensions = 1X          Only Piston <math>\varnothing</math> (AL) 40 to 200 mm          20 to 29 unchanged installation and connection dimensions = 2X          Only Piston <math>\varnothing</math> (AL) 200 to 320 mm</p> <p><b>Line connection / version</b>          pipe thread ISO 228-1 = B          metric thread ISO 261 = M          Flange porting pattern according to ISO 6162 tab.2 (SAE 6000 PSI) 5), 10) = D          Flange porting pattern according to ISO 6164 tab.2 5) = H          pipe thread ISO 228-1 with flat pipe flange = C</p> <p><b>Line connection/location at head and base</b> = 1          = 2          = 3          = 4</p>  <p><b>Piston rod design</b>          Hard chromium-plated = C          Hardened and hard chromium-plated 3) = H          Nickel-plated and hard chromium-plated 4) = N</p>		<p><b>Option 2</b>          A= 15) free-Maintenance self-aligning bearing connection          B= flange grease nipple          C= 9) analogue output 4-20mA          F= 9) analogue output 0-10V          D= 9) digital output ssi          Y=12) enter piston rod extension LY          W= in clear text in mm without option</p> <p><b>Option 1</b>          A= screwed coupling both sides          F= 6) guide ring          E= inductive proximity switch without plug-in connector          Plug-in connector-separate order, see page 58          T=13) position measuring system (magnetostrictive)          Without plug-in connector          Plug-in connector-separate order, see page 57          W= without option</p> <p><b>Seal design</b>  <b>For mineraloil HL, HLP and HFA</b>          M = Standard seal system          T = Servo quality/reduced friction          A = Chevron seal kits          For phosphate ester HFD-R and polyol ester HFD-U          S = Servo quality/reduced friction          B = Chevron seal kits</p> <p><b>End position cushioning</b>          U = Without          D = 1) Both sides, self-adjusting          E = Both sides, adjustable</p> <p><b>Piston rod end</b>          A = Thread for self-aligning clevis CGAS          G = 11) Thread for self-aligning clevis CGA,CGAK, plain clevis CSA          S = 7) With mounted self-aligning clevis CGAS          L = 7) 11) With mounted self-aligning clevis CGA          M = 7) 11) With mounted self-aligning clevis CGAK          N = 1) 7) With mounted plain clevis CSA</p>
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### 缸底摆动吊环 MP3/Plain clevis at base MP3

FCDH1 MP3; AL- $\varnothing$  40-200 mm



在密封款式“A”，“B”和活塞直径为160-200mm时  
 With seal design “A”, “B” and AL  $\varnothing$  160 - 320 mm



### 尺寸 MP3 (公称尺寸, 单位mm) Dimensions MP3 (dimensions in mm)

AL	MM	KK	A	KK	A	NV	D	DA	D4	EE	EE	Y	PJ
Φ	Φ	5)	5)	6)	6)				2)	4)	4)		
40	22/28	M16X1.5	16	M18X2	30	16/22	88	50	34	G1/2	M22X1.5	79	120
50	28/36	M22X1.5	22	M24X2	35	22/30	102	60	34	G1/2	M22X1.5	87	120
63	36/45	M28X1.5	28	M30X2	45	30/36	120	78	42	G3/4	M27X2	100	133
80	45/56	M35X1.5	35	M39X3	55	36/46	140	95	42	G3/4	M27X2	104	146
100	56/70	M45X1.5	45	M50X3	75	46/60	170	125	47	G1	M33X2	124	171
125	70/90	M58X1.5	58	M64X3	95	60/75	206	150	58	G1 1/4	M42X2	135	205
140	90/100	M65X1.5	65	M80X3	110	75/85	226	170	58	G1 1/4	M42X2	156	219
160	100/110	M80X2	80	M90X3	120	85/95	265	190	65	G1 1/2	M48X2	185	240
180	110/125	M100X2	100	M100X3	140	95/110	292	210	65	G1 1/2	M48X2	199	264
200	125/140	M110X2	110	M110X4	150	110/120	310	235	65	G1 1/2	M48X2	205	278

AL	MM	X1	WA	XC	L	MR	M1	CDH11	EW	RA <sup>7)</sup>	VE <sup>7)</sup>	RA <sup>8)</sup>	VE <sup>8)</sup>
Φ	Φ								-0.4	f8		f8	
40	22/28	41	14	252	32.5	31	28	25	23	52	40	52	20
50	28/36	48.5	18	265	37.5	36	32.5	30	28	65	40	65	16
63	36/45	56.5	22	302	45	42	40	35	30	75	45	75	17
80	45/56	67	20	330	50	52	50	40	35	95	45	95	13
100	56/70	82	30	385	60	65	62.5	50	40	115	55	115	20
125	70/90	99	32	447	70	70	70	60	50	135	60	135	17
140	90/100	109.5	35	490	75	82	82	70	55	155	70	155	22
160	100/110	129	40	550	85	95	95	80	60	200	80	200	80
180	110/125	142.5	40	610	90	113	113	90	65	220	90	220	90
200	125/140	152	40	645	115	125	125	100	70	235	95	235	95

AL = 活塞直径

MM = 活塞杆直径

X\* = 行程长度

1) = 放气阀: 对着活塞杆端看, 其位置总是与油口 相差 90 度 (顺时针方向)

2) = 直径 D4 最大深度 0.5 mm

3) = 节流阀仅在终端缓冲 "E" 时 (相距放气阀 180 度)

4) = 19 页的单独表格

5) = 螺纹款式 "G"

6) = 螺纹款式 "A"

7) = 尺寸用于带密封款式 M, T 和 S 的液压缸

8) = 尺寸用于带密封款式 A 和 B 的液压缸

9) = 锥形润滑头, 按 DIN 71412 A 型

AL= Piston Ø

MM= Piston rod Ø

X\*= Stroke length

1) =Bleeding: With view to the piston rod, the position is offset by 90° in relation to the line connection(clockwise)

2) =Ø D4 max. 0.5 mm deep

3)=Throttle valve only with end position cushioning "E" (180° for bleeding)

4)=Flange connections see separate table pages 18and 19

5)=Thread design "G"

6)=Thread design "A"

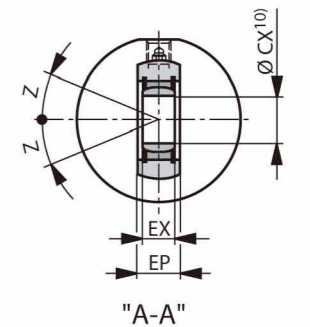
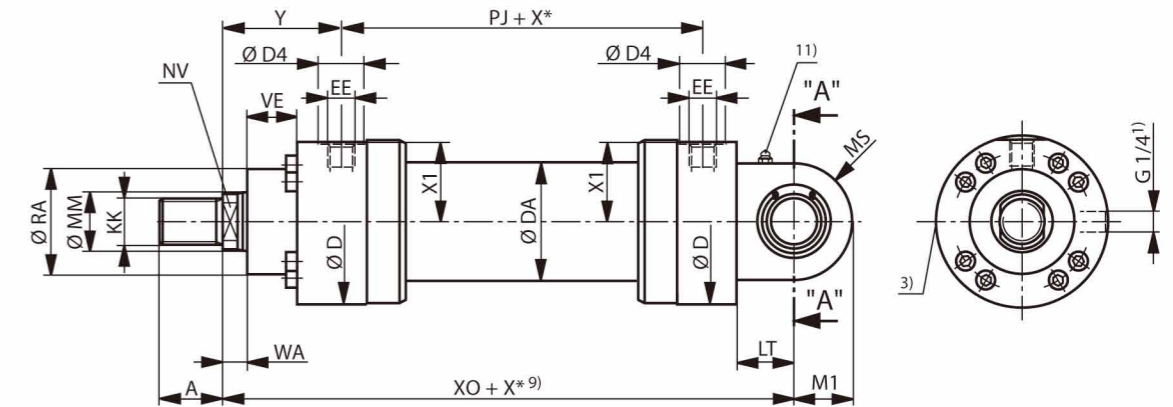
7)=Dimensions for cylinders with seal design M, T, and S

8)=Dimensions for cylinders with seal design A and B

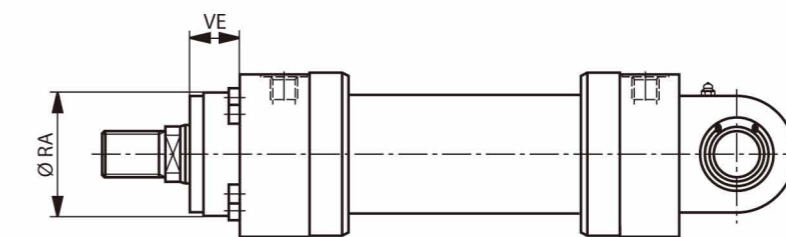
9)=Grease nipple cone head form A according to DIN 71412

### 缸底绞接吊环头 MP5 Plain clevis at base: MP5

FCDH1 MP5



在密封款式 "A", "B" 和活塞直径为 160-320mm 时 With seal design "A", "B" and AL Ø 160 - 320 mm



### 尺寸 MP5 (公称尺寸, 单位mm) Dimensions MP5 (dimensions in mm)

AL	MM	KK	A	KK	A	NV	D	DA	D4	EE	EE	Y	PJ	X1
Φ	Φ	5)	5)	6)	6)				2)	4)	4)			
40	22/28	M16X1.5	16	M18X2	30	16/22	88	50	34	G1/2	M22X1.5	79	120	41
50	28/36	M22X1.5	22	M24X2	35	22/30	102	60	34	G1/2	M22X1.5	87	120	48.5
63	36/45	M28X1.5	28	M30X2	45	30/36	120	78	42	G3/4	M27X2	100	133	56.5
80	45/56	M35X1.5	35	M39X3	55	36/46	140	95	42	G3/4	M27X2	104	146	67
100	56/70	M45X1.5	45	M50X3	75	46/60	170	125	47	G1	M33X2	124	171	82
125	70/90	M58X1.5	58	M64X3	95	60/75	206	150	58	G1 1/4	M42X2	135	205	99
140	90/100	M65X1.5	65	M80X3	110	75/85	226	170	58	G1 1/4	M42X2	156	219	109.5
160	100/110	M80X2	80	M90X3	120	85/95	265	190	65	G1 1/2	M48X2	185	240	129
180	110/125	M100X2	100	M100X3	140	95/110	292	210	65	G1 1/2	M48X2	199	264	142.5
200	125/140	M110X2	110	M110X4	150	110/120	310	235	65	G1 1/2	M48X2	205	278	152
220	140/160	M120X3	120	M120X4	160	120/140	355	273	65	G1 1/2	M48X2	242	326	174
250	160/180	M120X3	120	M120X4	160	140/160	393	305	65	G1 1/2	M48X2	266	326	194
280	180/200	M130X3	130	M150X4	190	160/180	425	343	65	G1 1/2	M48X2	282	375	210
320	200/220	-	-	M160X4	200	180/200	490	394	65	G1 1/2	M48X2	287	431	242

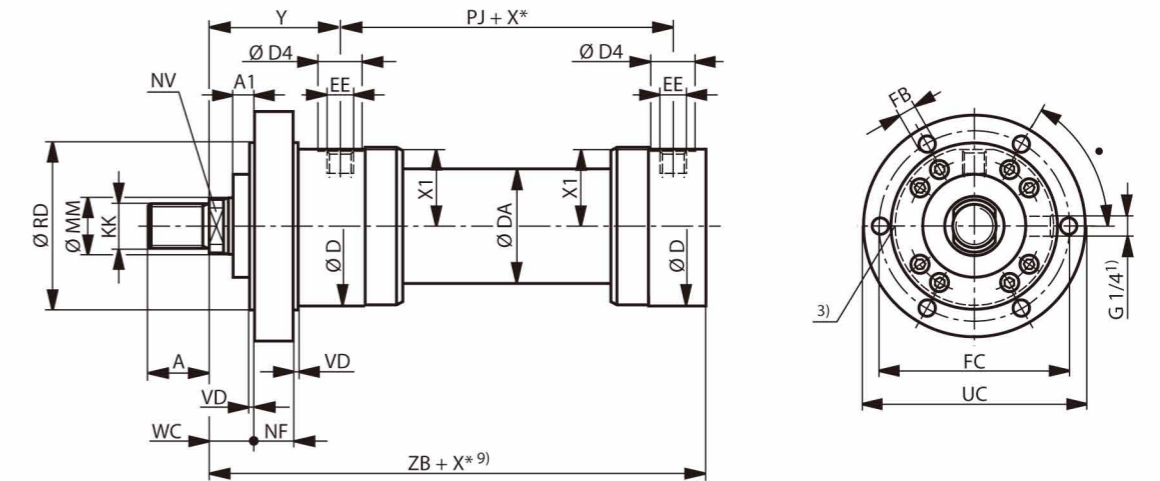
AL	MM	WA	XO	X*	LT	M1	MS	CX	EP	EX	Z	RA <sup>7)</sup>	VE <sup>7)</sup>	RA <sup>8)</sup>	VE <sup>8)</sup>
Φ	Φ			min					-0.4			f8		f8	
40	22/28	14	252	-	32.5	28	31	25 <sub>-0.010</sub>	23	20 <sub>-0.12</sub>	7°	52	40	52	20
50	28/36	18	265	-	37.5	32.5	36	30 <sub>-0.010</sub>	28	22 <sub>-0.12</sub>	6°	65	40	65	16
63	36/45	22	302	-	45	40	42	35 <sub>-0.012</sub>	30	25 <sub>-0.12</sub>	6°	75	45	75	17
80	45/56	20	330	-	50	50	52	40 <sub>-0.012</sub>	35	28 <sub>-0.12</sub>	7°	95	45	95	13
100	56/70	30	385	-	60	62.5	65	50 <sub>-0.012</sub>	40	35 <sub>-0.12</sub>	6°	115	55	115	20
125	70/90	32	447	-	70	70	70	60 <sub>-0.015</sub>	50	44 <sub>-0.15</sub>	6°	135	60	135	17
140	90/100	35	490	-	75	82	82	70 <sub>-0.015</sub>	55	49 <sub>-0.15</sub>	6°	155	70	155	22
160	100/110	40	550	-	85	95	95	80 <sub>-0.015</sub>	60	55 <sub>-0.15</sub>	6°	200	80	200	80
180	110/125	40	610	-	90	113	113	90 <sub>-0.020</sub>	65	60 <sub>-0.20</sub>	5°	220	90	220	90
200	125/140	40	645	-	115	125	125	100 <sub>-0.020</sub>	70	70 <sub>-0.20</sub>	7°	235	95	235	95
220	140/160	40	750	-	125	142.5	132.5	110 <sub>-0.020</sub>	80	70 <sub>-0.20</sub>	6°	270	115	270	115
250	160/180	40	789	-	140	160	150	110 <sub>-0.020</sub>	80	70 <sub>-0.20</sub>	6°	300	125	300	125
280	180/200	40	884	3 1	150	180	170	120 <sub>-0.020</sub>	90	85 <sub>-0.20</sub>	6°	325	130	325	130
320	200/220	40	980	-	175	200	190	140 <sub>-0.020</sub>	110	90 <sub>-0.20</sub>	7°	365	155	365	155

- AL = 活塞直径
- MM = 活塞杆直径
- X\* = 行程长度
- 1) = 放气阀: 对着活塞杆端看, 其位置总是与油口相差 90° (顺时针方向)
- 2) = 直径 D4 最大深度 0.5 mm
- 3) = 节流阀仅在终端缓冲 "E" 时 (相距放气阀 180°)
- 4) = 法兰油口见 18 和 19 页的单独表格
- 5) = 螺纹款式 "G"
- 6) = 螺纹款式 "A"
- 7) = 尺寸用于带密封款式 M, T 和 S 的液压缸
- 8) = 尺寸用于带密封款式 A 和 B 的液压缸
- 9) = 注意最小行程长度 "X\*min."
- 10) = 所属的销 Øm6; 在免维护铰接轴承时, 所属的销 Ø j6
- 11) = 锥形润滑油头, 按 DIN 7 1412 A 型

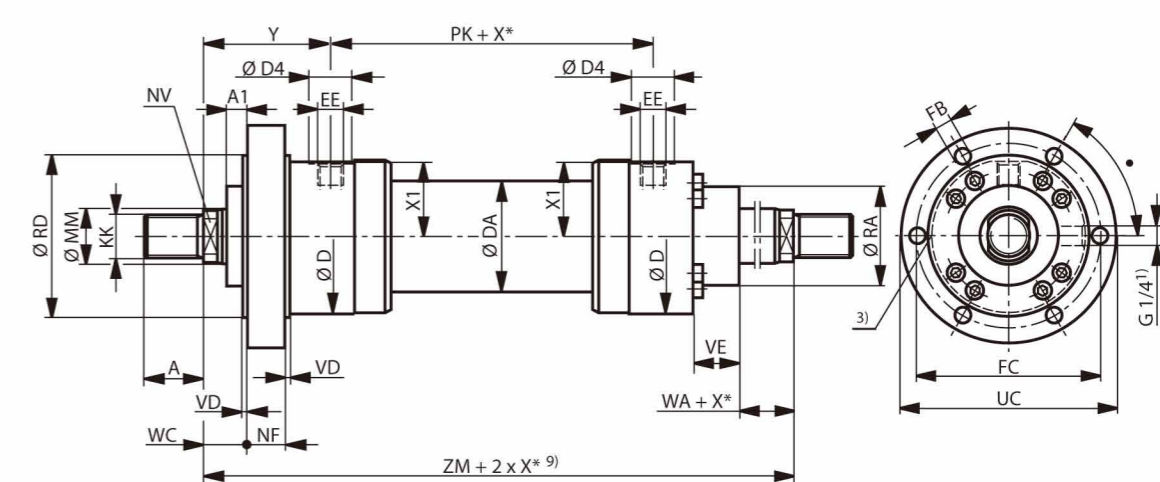
- AL = Piston Ø
- MM = Piston rod Ø
- X\* = Stroke length
- 1) = Bleeding: With view to the piston rod, the position is offset by 90° in relation to the line connection (clockwise)
- 2) = Ø D4 max. 0.5 mm deep
- 3) = Throttle valve only with end position cushioning "E" (180° for bleeding)
- 4) = Flange connections see separate table pages 18 and 19
- 5) = Thread design "G"
- 6) = Thread design "A"
- 7) = Dimensions for cylinders with seal design M, T, S
- 8) = Dimensions for cylinders with seal design A and B Standard
- 9) = Observe min. stroke length "X\*min"
- 10) = Related bolt Ø m6; related bolt Ø j6 with maintenance-free plain bearing
- 11) = Grease nipple cone head form A according to DIN 71412

### 缸头圆法兰 MF3 Round flange at head MF3

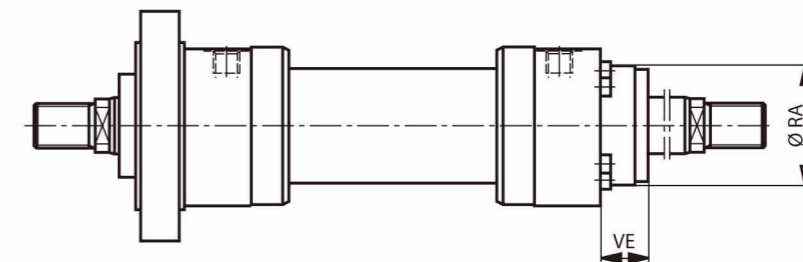
FCDH1 MF3



FCDH1 MF3



在密封款式 "A", "B" 和活塞直径为 160-320mm 时 With seal design "A", "B" and AL Ø 160 - 320 mm



### 尺寸 MP3 (公称尺寸, 单位mm) Dimensions MF3 (dimensions in mm)

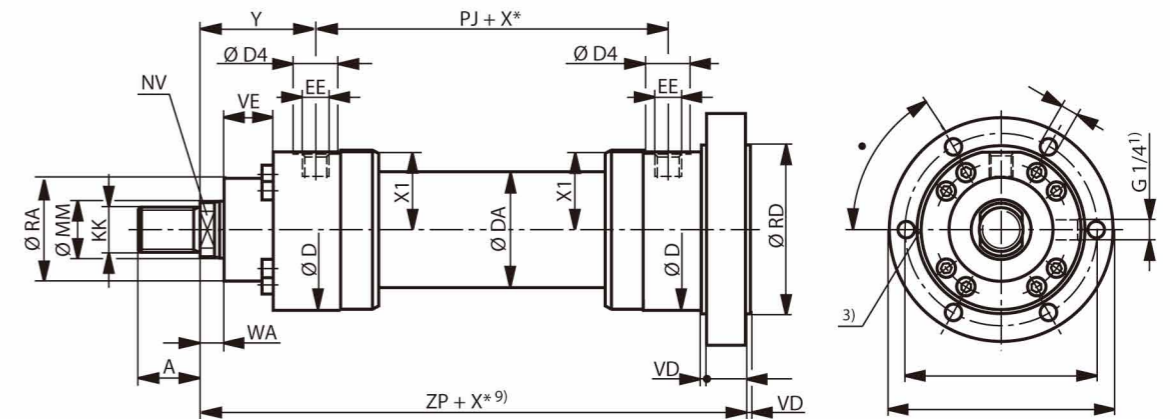
AL	MM	KK	A	KK	A	NV	D	DA	D4	EE	EE	Y	PJ	X1
Φ	Φ	5)	5)	6)	6)				2)	4)	4)			
40	22/28	M16X1.5	16	M18X2	30	16/22	88	50	34	G1/2		79	120	41
50	28/36	M22X1.5	22	M24X2	35	22/30	102	60	34	G1/2		87	120	48.5
63	36/45	M28X1.5	28	M30X2	45	30/36	120	78	42	G3/4	M27X2	100	133	56.5
80	45/56	M35X1.5	35	M39X3	55	36/46	140	95	42	G3/4	M27X2	104	146	67
100	56/70	M45X1.5	45	M50X3	75	46/60	170	125	47	G1	M33X2	124	171	82
125	70/90	M58X1.5	58	M64X3	95	60/75	206	150	58	G11/4	M42X2	135	205	99
140	90/100	M65X1.5	65	M80X3	110	75/85	226	170	58	G11/4	M42X2	156	219	109.5
160	100/110	M80X2	80	M90X3	120	85/95	265	190	65	G11/2	M48X2	185	240	129
180	110/125	M100X2	100	M100X3	140	95/110	292	210	65	G11/2	M48X2	199	264	142.5
200	125/140	M110X2	110	M110X4	150	110/120	310	235	65	G11/2	M48X2	205	278	152
220	140/160	M120X3	120	M120X4	160	120/140	355	273	65	G11/2	M48X2	242	326	174
250	160/180	M120X3	120	M120X4	160	140/160	393	305	65	G11/2	M48X2	266	326	194
280	180/200	M130X3	130	M150X4	190	160/180	425	343	65	G11/2	M48X2	282	375	210
320	200/220	-	-	M160X4	200	180/200	490	394	65	G11/2	M48X2	287	431	243

AL	MM	RD	WC	VD	NF	PK	A1	ZB	ZM	X*	FB	FC	UC	α	WA	RA <sup>7)</sup>	VE <sup>7)</sup>	RA <sup>8)</sup>	VE <sup>8)</sup>
Φ	Φ	e8								min	H13	js 13	-			f8	f8	f8	
40	22/28	90	19	5	30	120	0	226	278	-	9	108	130	60°	14	52	40	52	20
50	28/36	110	23	5	30	120	0	233	294	-	11	130	160	60°	18	65	40	65	16
63	36/45	130	27	5	35	133	0	262	333	-	13.5	155	185	60°	22	75	45	75	17
80	45/56	145	25	5	35	146	0	280	354	-	13.5	170	200	60°	20	95	45	95	13
100	56/70	175	35	5	45	171	0	330	419	-	17.5	205	245	60°	30	115	55	115	20
125	70/90	210	37	5	50	205	0	382	475	-	22	245	295	60°	32	135	60	135	17
140	90/100	230	45	10	50	219	0	420	531	-	22	265	315	60°	35	155	70	155	22
160	100/110	275	50	10	60	240	0	475	610	-	30	325	385	60°	40	200	80	200	80
180	110/125	300	50	10	70	264	0	515	662	-	30	360	420	60°	40	220	90	220	90
200	125/140	320	50	10	75	278	0	535	688	-	33	375	445	60°	40	235	95	235	95
220	140/160	370	60	10	85	326	20	635	810	-	33	430	490	60°	40	270	115	270	115
250	160/180	415	70	10	85	326	30	659	858	-	39	485	555	60°	40	300	125	300	125
280	180/200	450	65	10	95	375	25	744	939	31	39	520	590	60°	40	325	130	325	130
320	200/220	510	65	10	120	431	25	815	1005	-	45	600	680	60°	40	365	155	365	155

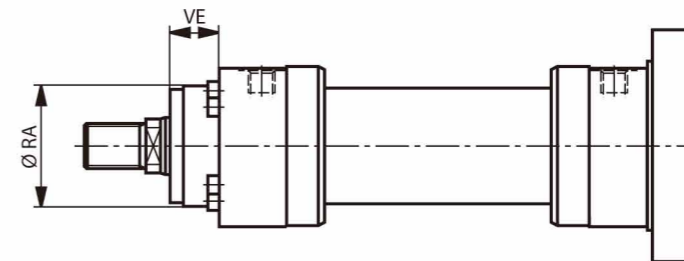
- |  |  |
|--|--|
| AL = 活塞直径                                  | AL= Piston Ø   |
| MM = 活塞杆直径                                 | MM= Piston rod Ø   |
| X* = 行程长度                                  | X*= Stroke length  |
| 1) = 放气阀: 对着活塞杆端看, 其位置总是与油口相差 90 度 (顺时针方向) | 1) =Bleeding: With view to the piston rod, the position is offset by 90° in relation to the line connection(clockwise) |
| 2) = 直径 D4 最大深度 0.5 mm                     | 2) =Ø D4 max. 0.5 mm deep  |
| 3) = 节流阀仅在终端缓冲 "E" 时(相距放气阀 180 度)          | 3)=Throttle valve only with end position cushioning"E" (180° for bleeding)   |
| 4) = 法兰油口见 18 和 19 页的单独表格                  | 4)=Flange connections see separate table pages 18and 19  |
| 5) = 螺纹款式 "G"                              | 5)=Thread design "G"   |
| 6) = 螺纹款式 "A"                              | 6)=Thread design "A"   |
| 7) = 尺寸用于带密封款式 M, T 和 S 的液压缸               | 7)=Dimensions for cylinders with seal design M, T, S   |
| 8) = 尺寸用于带密封款式 A 和 B 的液压缸                  | 8)=Dimensions for cylinders with seal design A and B Standard  |
| 9) = 注意最小行程长度 "X*min."                     | 9)=Observe min. stroke length "X*min"  |

### 缸底圆法兰 MF4 Round flange at base MF4

FCDH1 MF4



在密封款式 "A", "B" 和活塞直径为 160-320mm 时 With seal design "A", "B" and AL Ø 160 - 320 mm



### 尺寸 MF4 (公称尺寸, 单位mm) Dimensions MT4 (dimensions in mm)

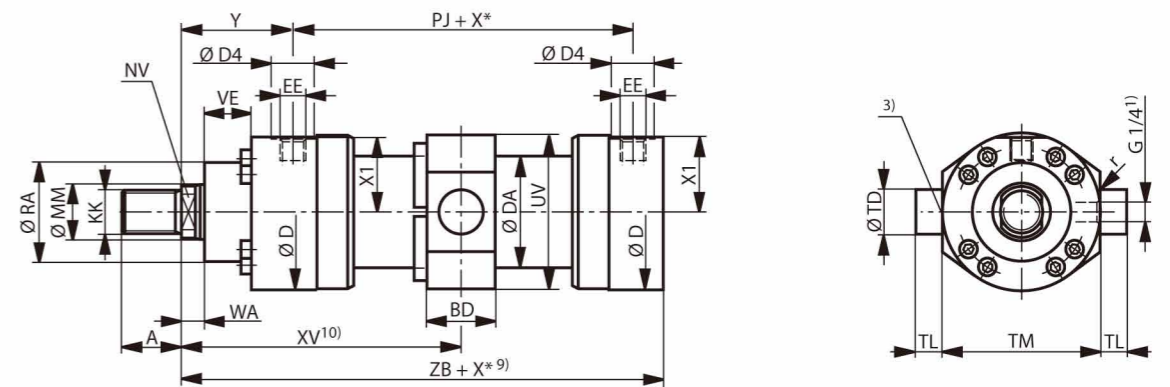
AL	MM	KK	A	KK	A	NV	D	DA	D4	EE	EE	Y	PJ	X1
Φ	Φ	5)	5)	6)	6)			2)	4)	4)				
40	22/28	M16X1.5	16	M18X2	30	16/22	88	50	34	G1/2		79	120	41
50	28/36		22	M24X2	35	22/30	102	60	34	G1/2		87	120	48.5
63	36/45		28	M30X2	45	30/36	120	78	42	G3/4	M27X2	100	133	56.5
80	45/56		35	M39X3	55	36/46	140	95	42	G3/4	M27X2	104	146	67
100	56/70		45	M50X3	75	46/60	170	125	47	G1	M33X2	124	171	82
125	70/90		58	M64X3	95	60/75	206	150	58	G1 1/4	M42X2	135	205	99
140	90/100		65	M80X3	110	75/85	226	170	58	G1 1/4	M42X2	156	219	109.5
160	100/110	M80X2	80	M90X3	120	85/95	265	190	65	G1 1/2	M48X2	185	240	129
180	110/125	M100X2	100	M100X3	140	95/110	292	210	65	G1 1/2	M48X2	199	264	142.5
200	125/140	M110X2	110	M110X4	150	110/120	310	235	65	G1 1/2	M48X2	205	278	152
220	140/160	M120X3	120	M120X4	160	120/140	355	273	65	G1 1/2	M48X2	242	326	174
250	160/180	M120X3	120	M120X4	160	140/160	393	305	65	G1 1/2	M48X2	266	326	194
280	180/200	M130X3	130	M150X4	190	160/180	425	343	65	G1 1/2	M48X2	282	375	210
320	200/220	-	-	M160X4	200	180/200	490	394	65	G1 1/2	M48X2	287	431	243

AL	MM	WA	ZP	X*	NF	VD	RD	FB	FC	UC	α	RA <sup>7)</sup>	VE <sup>7)</sup>	RA <sup>8)</sup>	VE <sup>8)</sup>
Φ	Φ			min			e8	H 13	js 13	-		f8	f8	f8	f8
40	22/28	14	256	-	30	5	90	9	108	130	60°	52	40	52	20
50	28/36	18	264	-	30	5	110	11	130	160	60°	65	40	65	16
63	36/45	22	297	-	35	5	130	13.5	155	185	60°	75	45	75	17
80	45/56	20	315	-	35	5	145	13.5	170	200	60°	95	45	95	13
100	56/70	30	375	-	45	5	175	17.5	205	245	60°	115	55	115	20
125	70/90	32	432	-	50	5	210	22	245	295	60°	135	60	135	17
140	90/100	35	475	-	50	10	230	22	265	315	60°	155	70	155	22
160	100/110	40	535	-	60	10	275	30	325	385	60°	200	80	200	80
180	110/125	40	585	-	70	10	300	30	360	420	60°	220	90	220	90
200	125/140	40	615	-	75	10	320	33	375	445	60°	235	95	235	95
220	140/160	40	720	-	85	10	370	33	430	490	60°	270	115	270	115
250	160/180	40	744	-	85	10	415	39	485	555	60°	300	125	300	125
280	180/200	40	839	3	95	10	450	39	520	590	60°	325	130	325	130
320	200/220	40	935	-	120	10	510	45	600	680	60°	365	155	365	155

- |  |  |
|--|--|
| AL = 活塞直径                                  | AL= Piston Ø   |
| MM = 活塞杆直径                                 | MM= Piston rod Ø   |
| X* = 行程长度                                  | X* = Stroke length   |
| 1) = 放气阀: 对着活塞杆端看, 其位置总是与油口相差 90 度 (顺时针方向) | 1) =Bleeding: With view to the piston rod, the position is offset by 90° in relation to the line connection(clockwise) |
| 2) = 直径D4最大深度 0.5mm                        | 2) =Ø D4 max. 0.5 mm deep  |
| 3) = 节流阀仅在终端缓冲 "E" 时(相距放气阀 180 度)          | 3)=Throttle valve only with end position cushioning "E" (180° for bleeding)  |
| 4) = 法兰油口见 18 和 19 页的单独表格                  | 4)=Flange connections see separate table pages 18 and 19   |
| 5) = 螺纹款式 "G"                              | 5)=Thread design "G"   |
| 6) = 螺纹款式 "A"                              | 6)=Thread design "A"   |
| 7) = 尺寸用于带密封款式 M, T 和 S 的液压缸               | 7)=Dimensions for cylinders with seal design M, T, S   |
| 8) = 尺寸用于带密封款式 A 和 B 的液压缸                  | 8)=Dimensions for cylinders with seal design A and B Standard  |
| 9) = 注意最小行程长度 "X*min."                     | 9)=Observe min. stroke length "X*min"  |

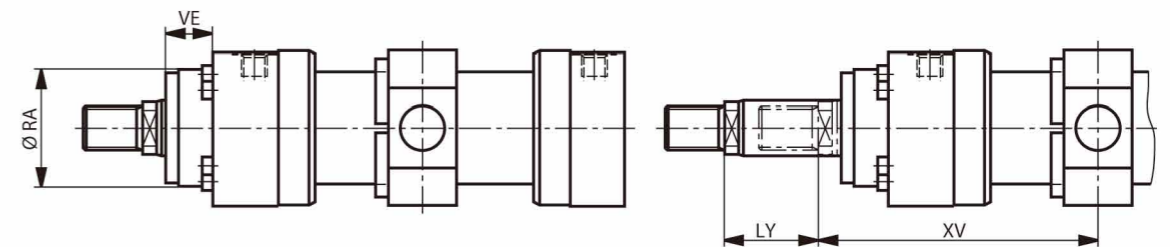
### 中间耳轴 MT4 Trunnion MT4

FCDH1 MT4

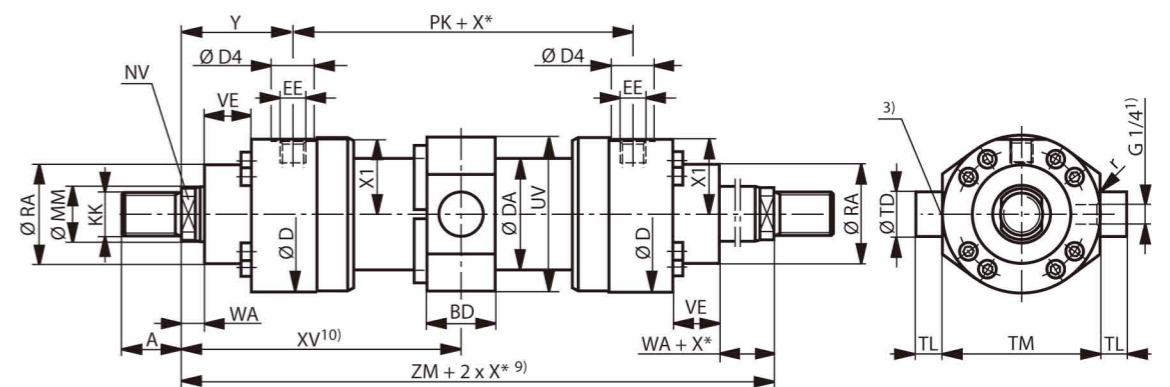


在密封款式“A”、“B”和活塞直径为160-320mm时  
With seal design “A”, “B” and AL Ø 160 - 320 mm

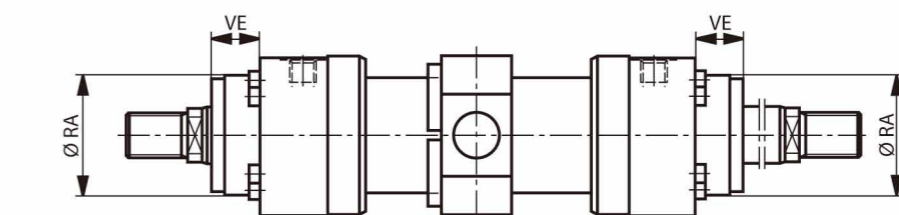
在密封款式“A”、“B”和活塞直径为160-320mm时  
With seal design “A”, “B” and AL Ø 160 - 320 mm



FCDH1 MT4



在密封款式“A”、“B”和活塞直径为160-320mm时  
With seal design “A”, “B” and AL Ø 160 - 320 mm





### 尺寸 MF4 (公称尺寸, 单位mm) Dimensions MF4 (dimensions in mm)

AL	MM	KK	A	KK	A	NV	D	DA	D4	EE	EE	Y	PJ	X1	WA
Φ	Φ	5)	5)	6)	6)				2)	4)	4)				
40	22/28	M16X1.5	16	M18X2	30	16/22	88	50	34	G1/2	M22X1.5	79	120	41	14
50	28/36		22	M24X2	35	22/30	102	60	34	G1/2	M22X1.5	87	120	48.5	18
63	36/45		28	M30X2	45	30/36	120	78	42	G3/4	M27X2	100	133	56.5	22
80	45/56		35	M39X3	55	36/46	140	95	42	G3/4	M27X2	104	146	67	20
100	56/70		45	M50X3	75	46/60	170	125	47	G1	M33X2	124	171	82	30
125	70/90		58	M64X3	95	60/75	206	150	58	G1 1/4	M42X2	135	205	99	32
140	90/100		65	M80X3	110	75/85	226	170	58	G1 1/4	M42X2	156	219	109.5	35
160	100/110	M80X2	80	M90X3	120	85/95	265	190	65	G1 1/2	M48X2	185	240	129	40
180	110/125	M100X2	100	M100X3	140	95/110	292	210	65	G1 1/2	M48X2	199	264	142.5	40
200	125/140	M110X2	110	M110X4	150	110/120	310	235	65	G1 1/2	M48X2	205	278	152	40
220	140/160	M120X3	120	M120X4	160	120/140	355	273	65	G1 1/2	M48X2	242	326	174	40
250	160/180	M120X3	120	M120X4	160	140/160	393	305	65	G1 1/2	M48X2	266	326	194	40
280	180/200	M130X3	130	M150X4	190	160/180	425	343	65	G1 1/2	M48X2	282	375	210	40
320	200/220	-	-	M160X4	200	180/200	490	394	65	G1 1/2	M48X2	287	431	243	40

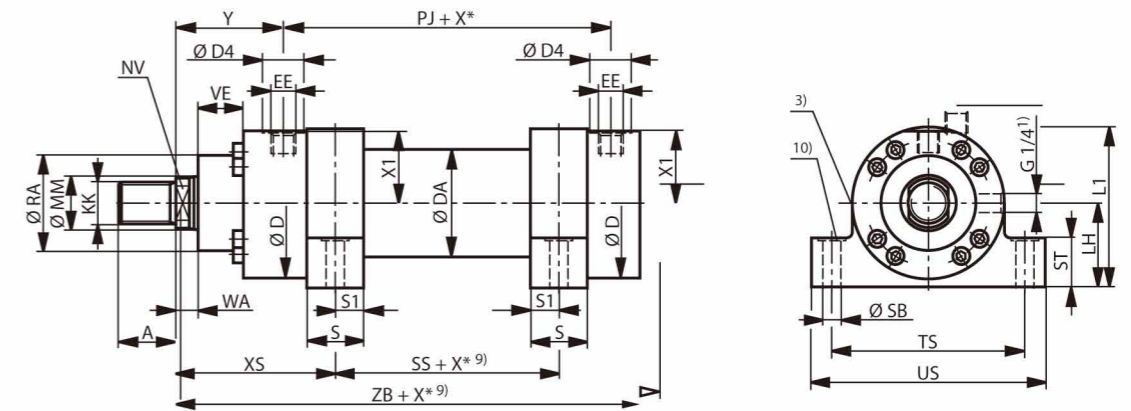
AL	MM	PK	ZB	ZM	X*	XV <sup>11)</sup>	XV <sup>10)</sup>	XV <sup>10)</sup>	BD	UV	TD	TL	TM	r	RA <sup>7)</sup>	VE <sup>7)</sup>	RA <sup>8)</sup>	VE <sup>8)</sup>
Φ					min.	mitt	min.	max.			e8	js16	h13		f8	f8	f8	
40	22/28	120	226	278	22	139+X*/2	150	136+X*	38	88	30	20	95	1.6	52	40	52	20
50	28/36	120	233	294	32	147+X*/2	163	140+X*	38	102	30	20	115	1.6	65	40	65	16
63	36/45	133	262	333	47	166.5+X*/2	190	155+X*	48	120	35	20	130	2	75	45	75	17
80	45/56	146	280	354	58	177+X*/2	206	160+X*	58	140	40	25	145	2	95	45	95	13
100	56/70	171	330	419	79	209.5+X*/2	249	185+X*	78	170	50	30	175	2	115	55	115	20
125	70/90	205	382	475	91	237.5+X*/2	283	207+X*	98	206	60	40	210	2.5	135	60	135	17
140	90/100	219	420	531	121	265.5+X*/2	326	220+X*	118	226	65	42.5	230	2.5	155	70	155	22
160	100/110	240	475	610	142	305+X*/2	376	254+X*	128	265	75	52.5	275	2.5	200	80	200	80
180	110/125	264	515	661	158	331+X*/2	410	272+X*	138	292	85	55	300	2.5	220	90	220	90
200	125/140	278	535	688	194	344+X*/2	441	267+X*	168	310	90	55	320	2.5	235	95	235	95
220	140/160	326	635	810	155	405+X*/2	482.5	327.5+X*	135	355	100	60	370	2.5	270	115	270	115
250	160/180	326	659	858	175	429+X*/2	516.5	341.5+X*	145	395	110	65	410	2.5	300	125	300	125
280	180/200	375	744	939	336	469.5+X*/2	637.5	301.5+X*	165	425	130	70	450	2.5	325	130	325	130
320	200/220	431	815	1005	180	502.5+X*/2	592.5	412.5+X*	195	490	160	90	510	2.5	365	155	365	155

- AL = 活塞直径
- MM = 活塞杆直径
- X\* = 行程长度
- 1) = 放气阀: 对着活塞杆端看, 其位置总是与油口相差 90 度 (顺时针方向)
- 2) = 直径 D4 最大深度 0.5 mm
- 3) = 节流阀仅在终端缓冲 "E" 时 (相距放气阀 180 度)
- 4) = 法兰油口见 18 和 19 页的单独表格
- 5) = 螺纹款式 "G"
- 6) = 螺纹款式 "A"
- 7) = 尺寸用于带密封款式 M, T 和 S 的液压缸
- 8) = 尺寸用于带密封款式 A 和 B 的液压缸
- 9) = 注意最小行程长度 "X\*min."
- 10) = 尺寸 "XV" 在订货时用文字说明。首选的 XV 尺寸: 中间耳轴的位置在液压缸的中间。注意 XVmin 和 XVmax.
- 11) = 推荐 XVmitt: 中间耳轴的位置在液压缸的中间

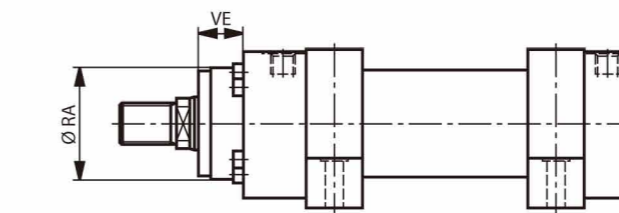
- AL = Piston Ø
- MM = Piston rod Ø
- X\* = Stroke length
- 1) = Bleeding: With view to the piston rod, the position is offset by 90° in relation to the line connection (clockwise)
- 2) = Ø D4 max. 0.5 mm deep
- 3) = Throttle valve only with end position cushioning "E" (180° for bleeding)
- 4) = Flange connections see separate table pages 18 and 19
- 5) = Thread design "G"
- 6) = Thread design "A"
- 7) = Dimensions for cylinders with seal design M, T, S
- 8) = Dimensions for cylinders with seal design A and B Standard
- 9) = Observe min. stroke length "X\*min"
- 10) = When ordering, always specify the "XV" dimension in the cleartext. Preferred XV dimension: Observe the trunnion position in the cylinder . center XVmin and XVmax.
- 11) = XVcent recommendation: Trunnion position in cylinder center

### 底座安装 MS2 Foot mounting MT4

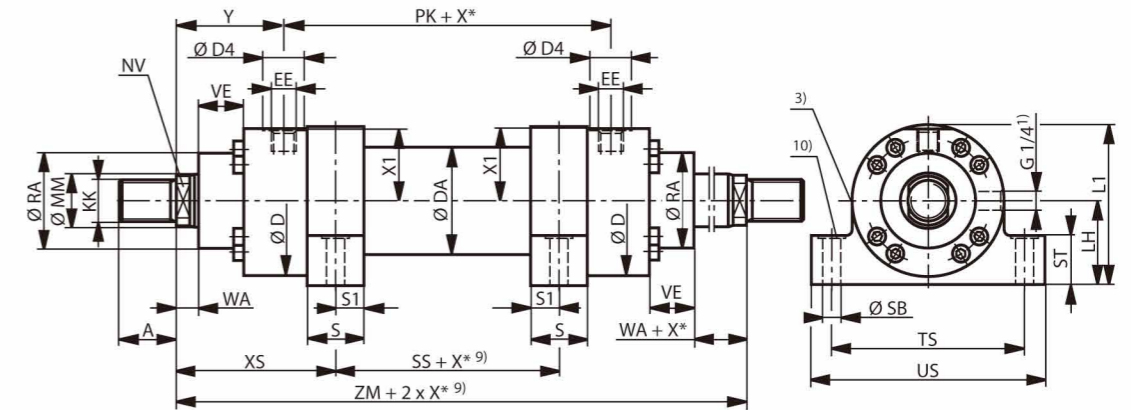
#### FCDH1 MS2



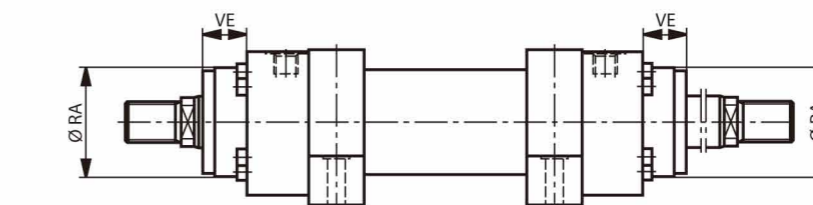
在密封款式“A”, “B”和活塞直径为160-320mm时 With seal design “A”, “B” and AL Ø 160 - 320 mm



#### FCDH1 MS2



在密封款式“A”, “B”和活塞直径为160-320mm时 With seal design “A”, “B” and AL Ø 160 - 320 mm



### 尺寸 MF4 (公称尺寸, 单位mm) Dimensions MS2 (dimensions in mm)

AL	MM	KK	A	KK	A	NV	D	DA	D4	EE	EE	Y	PJ	X1	WA
Φ	Φ	5)	5)	6)	6)				2)	4)	4)				
40	22/28	M16X1.5	16	M18X2	30	16/22	88	50	34	G1/2	M22X1.5	79	120	41	14
50	28/36	M22X1.5	22	M24X2	35	22/30	102	60	34	G1/2	M22X1.5	87	120	48.5	18
63	36/45	M28X1.5	28	M30X2	45	30/36	120	78	42	G3/4	M27X2	100	133	56.5	22
80	45/56	M35X1.5	35	M39X3	55	36/46	140	95	42	G3/4	M27X2	104	146	67	20
100	56/70	M45X1.5	45	M50X3	75	46/60	170	125	47	G1	M33X2	124	171	82	30
125	70/90	M58X1.5	58	M64X3	95	60/75	206	150	58	G1 1/4	M42X2	135	205	99	32
140	90/100	M65X1.5	65	M80X3	110	75/85	226	170	58	G1 1/4	M42X2	156	219	109.5	35
160	100/110	M80X2	80	M90X3	120	85/95	265	190	65	G1 1/2	M48X2	185	240	129	40
180	110/125	M100X2	100	M100X3	140	95/110	292	210	65	G1 1/2	M48X2	199	264	142.5	40
200	125/140	M110X2	110	M110X4	150	110/120	310	235	65	G1 1/2	M48X2	205	278	152	40
220	140/160	M120X3	120	M120X4	160	120/140	355	273	65	G1 1/2	M48X2	242	326	174	40
250	160/180	M120X3	120	M120X4	160	140/160	393	305	65	G1 1/2	M48X2	266	326	194	40
280	180/200	M130X3	130	M150X4	190	160/180	425	343	65	G1 1/2	M48X2	282	375	210	40
320	200/220	-	-	M160X4	200	180/200	490	394	65	G1 1/2	M48X2	287	431	243	40

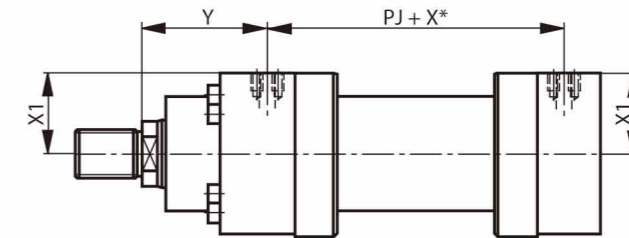
AL	MM	PK	XS	ZB	ZM	SS	X*	S	S1	SB	ST	TS	US	LH	L1	RA <sup>7)</sup>	VE <sup>7)</sup>	RA <sup>8)</sup>	VE <sup>8)</sup>
Φ	Φ						min.			H 13		js13	- 1			f8		f8	
40	22/28	120	114	226	278	50	-	30	15	11	32	110	135	45	89	52	40	52	20
50	28/36	120	124.5	233	294	45	-	35	17.5	11	37	130	155	55	106	65	40	65	16
63	36/45	133	142	262	333	49	-	40	20	13.5	42	150	180	65	125	75	45	75	17
80	45/56	146	115	280	354	52	2	50	25	17.5	47	180	220	75	145	95	45	95	13
100	56/70	171	179	330	419	61	3	60	30	22	57	210	255	90	175	115	55	115	20
125	70/90	205	200	382	475	75	-	70	35	26	67	255	305	105	208	135	60	135	17
140	90/100	219	230.5	420	531	70	19	85	42.5	30	72	290	350	115	228	155	70	155	22
160	100/110	240	272.5	475	610	65	44	105	52.5	33	77	330	400	135	267.5	200	80	200	80
180	110/125	264	296.5	515	662	69	50	115	57.5	40	92	360	440	150	296	220	90	220	90
200	125/140	278	307.5	535	688	73	56	125	62.5	40	97	385	465	160	315	235	95	235	95
220	140/160	326	367.5	635	810	75	100	155	77.5	45	102	445	530	185	362.5	270	115	270	115
250	160/180	326	391.5	659	858	75	100	155	77.5	52	112	500	600	205	402.5	300	125	300	125
280	180/200	375	407.5	744	939	124	171	155	77.5	52	127	530	630	225	437.5	325	130	325	130
320	200/220	431	1440	815	1005	125	185	190	95	62	142	610	730	255	500	365	155	365	155

AL = 活塞直径  
MM = 活塞杆直径  
X\* = 行程长度  
1) = 放气阀: 对着活塞杆端看, 其位置总是与油口相差 90 度 (顺时针方向)  
2) = 直径 D4 最大深度 0.5 mm  
3) = 节流阀仅在终端缓冲 "E" 时 (相距放气阀 180 度)  
4) = 法兰油口见 18 和 19 页的单独表格  
5) = 螺纹款式 "G"  
6) = 螺纹款式 "A"  
7) = 尺寸用于带密封款式 M, T 和 S 的液压缸  
8) = 尺寸用于带密封款式 A 和 B 的液压缸  
9) = 注意最小行程长度 "X\*min."  
10) = 沉孔 2mm 深, 用于圆柱头螺栓 DIN 912 螺栓不许受剪力作用。通过键传递力。

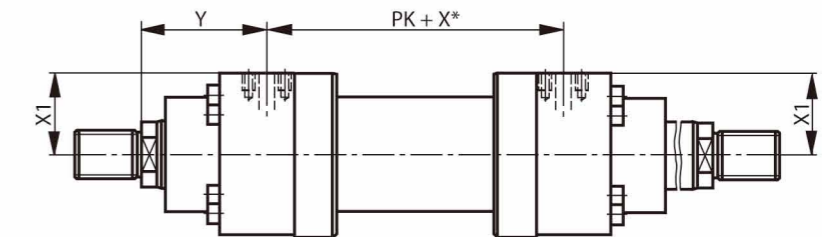
AL = Piston Ø  
MM = Piston rod Ø  
X\* = Stroke length  
1) = Bleeding: With view to the piston rod, the position is offset by 90° in relation to the line connection (clockwise)  
2) = Ø D4 max. 0.5 mm deep  
3) = Throttle valve only with end position cushioning "E" (180° for bleeding)  
4) = Flange connections see separate table pages 18 and 19  
5) = Thread design "G"  
6) = Thread design "A"  
7) = Dimensions for cylinders with seal design M, T, S  
8) = Dimensions for cylinders with seal design A and B Standard  
9) = Observe min. stroke length "X\*min"  
10) = Counterbore 2 mm deep, for hexagon socket head cap screws; DIN EN ISO 912 – The screws must not be subjected to shear force. The forces should be distributed via keys.

### 法兰油口 Flange connection

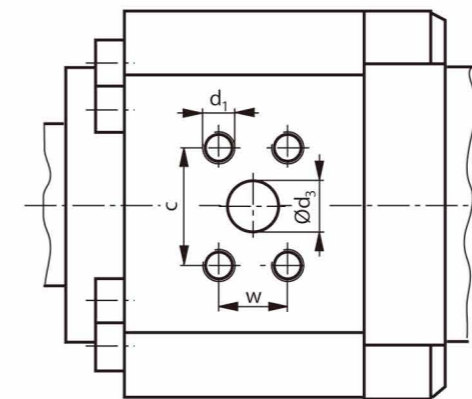
FCDH1



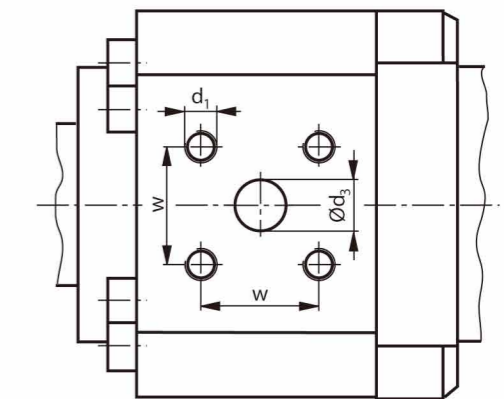
FCDH1



孔图用于矩形法兰按 ISO6162 表2  
(^=SAE 6000 PSI)  
Porting pattern for rectangular flange according to ISO 6162 table 2 (^= SAE 6000 PSI)



孔图用于矩形法兰按 ISO6164 表2  
Porting pattern for square flange according to ISO 6164 table 2



## 法兰油口 Flange connection

### 尺寸 MF4 (公称尺寸, 单位mm) Dimensions (nominal dimensions in mm)

AL	款式/Version "D" ISO 6162 表/Tab.2(400 bar) (≅ SAE 6000 PSI)											款式/Version "H" ISO 6164 表/Tab.2(400 bar)									
	Y	PJ	X1	d <sub>3</sub>	d <sub>3</sub> <sup>4)</sup>	c	w	d <sub>1</sub>	t <sub>1</sub> <sup>1)</sup>	t <sub>1</sub> <sup>2)</sup>	p <sup>3)</sup>	Y	PJ	X1	d <sub>3</sub>	w	d <sub>1</sub>	t <sub>1</sub> <sup>1)</sup>	t <sub>1</sub> <sup>2)</sup>	p <sup>3)</sup>	
Φ		PK		Ø	±0.25	±0.25						PK		Ø	±0.5						
40	-	-	-	-	-	-	-	-	-	400	78	122	40.5	10	24.7	M6	12.5	10	400		
50	-	-	-	-	-	-	-	-	-	400	86	122	48	10	24.7	M6	12.5	10	400		
63	-	-	-	-	-	-	-	-	-	400	99	135	57	13	29.7	M8	16	13	400		
80	102.5	149	65	13	1/2"	40.5	18.2	M8	16	16	400	103	148	67	13	29.7	M8	16	15	400	
100	124	171	80.5	13	1/2"	40.5	18.2	M8	16	16	400	123	173	81.5	19	35.4	M8	16	16	400	
125	135	205	97.5	19	3/4"	50.8	23.8	M10	20	20	400	131.5	212	99	25	43.8	M10	20	20	400	
140	152	227	107	25	1"	57.2	27.8	M12	24	24	400	152	227	109	25	43.8	M10	20	20	400	
160	184	242	127	25	1"	57.2	27.8	M12	24	24	400	182.5	245	128	32	51.6	M12	24	24	400	
180	199	264	139.5	32	1 1/4"	66.6	31.8	M14	26	26	400	199	264	142	32	51.6	M12	24	24	400	
200	205	278	149	32	1 1/4"	66.6	31.8	M14	26	26	400	201.5	285	149.5	38	60.1	M16	30	30	400	
220	242	326	168	38	1 1/2"	79.3	36.5	M16	30	30	400	242	326	171	38	60.1	M16	30	30	400	
250	266	326	189	38	1 1/2"	79.3	36.5	M16	30	30	400	266	326	192	38	60.1	M16	30	30	400	
280	282	375	204	38	1 1/2"	79.3	36.5	M16	30	30	400	282	375	207	38	60.1	M16	30	30	400	
320	287	431	236	51	2"	96.8	44.5	M20	36	36	400	287	431	240	51	69.3	M16	30	30	400	

主要尺寸见 6 至 17 页

AL = 活塞直径

X\* = 行程长度

1) = 螺纹销, 用于密封款式 M、T 和 S

2) = 螺纹销, 用于密封款式 A 和 B

3) = 所属的法兰的最大工作压力, 单位 bar

4) = 法兰孔图按 ISO 6 162 表 2

相应于法兰孔图 SAE 6000 PSI

Main dimensions see pages 10 to 21 and/or pages 24 to 35

AL=Piston Ø

X\*=Stroke length

1)=Thread depth for seal design M, T, S

2)=Thread depth for seal design A and B

3)=Max. operating pressure for related flanges in bar

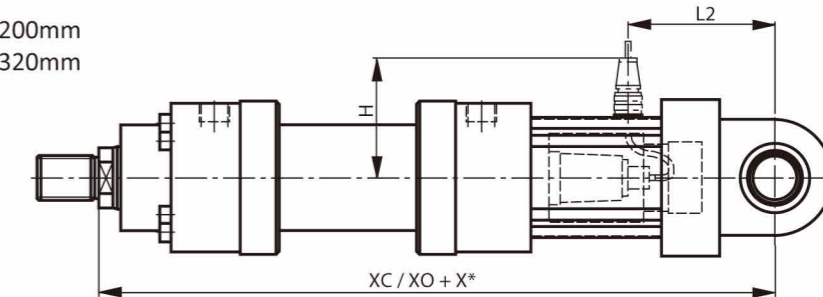
4)=Flange porting pattern according to ISO 6162 tab.2

corresponds to flange porting pattern according to SAE 6000 PSI

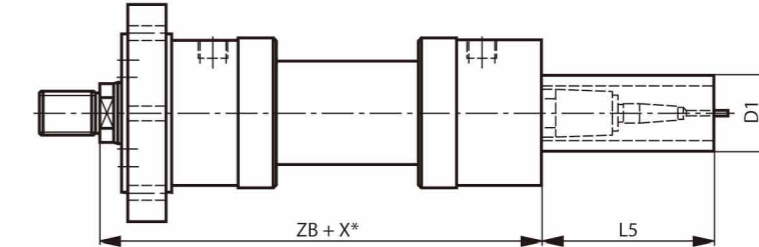
### 位置测量系统 position measurement system

MP3: AL-Ø40-200mm

MP5: AL-Ø40-320mm

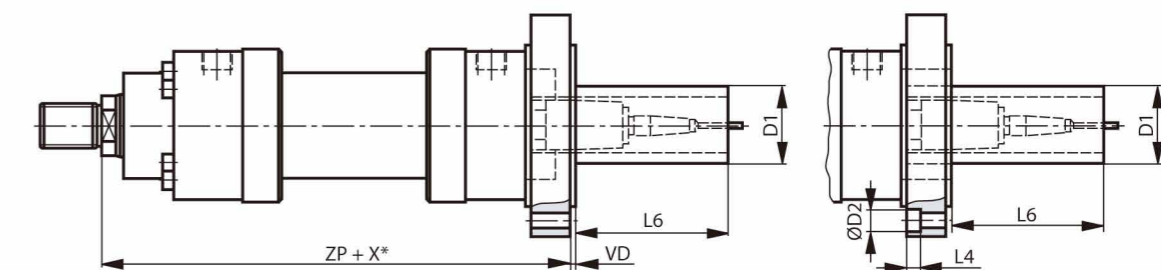


MF3: AL-Ø40-320mm

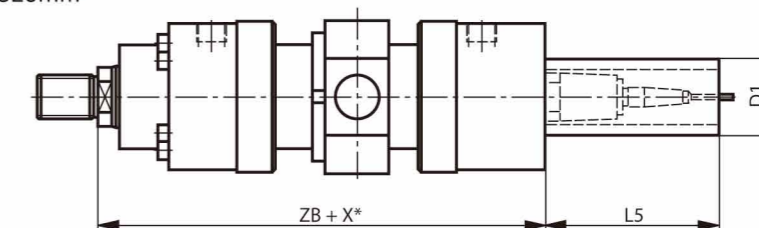


MF4: AL-Ø40-630mm

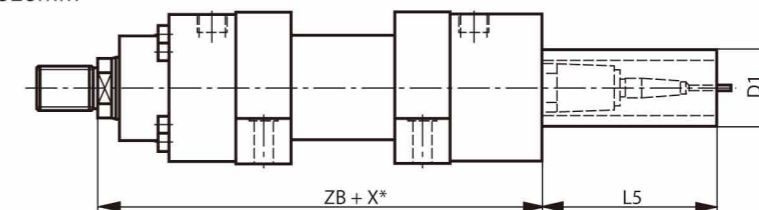
MF4: AL-Ø80-320mm



MT4: AL-Ø40-320mm



MS2: AL-Ø40-320mm



## 位置测量系统 position measurement system

### 尺寸 MF4 (公称尺寸, 单位mm) Dimensions (nominal dimensions in mm)

AL	MM	X*max	XC	XO	H	ZB	ZP	VD	L2	L4	L5	L6	D1	D2
∅	∅												max	∅
40	28	400	417	4 17	115	235	265	5	98	0	166	166	80	0
50	36	400	430	430	120	243	274	5	103	0	166	166	96	0
63	45	2000	480	480	130	287	310	5	116	0	166	166	96	0
80	56	2000	515	515	125	312	330	5	132	0	166	143	96	0
100	70	3000	560	560	135	352	390	5	145	0	166	123	96	0
125	90	3000	620	620	145	392	432	5	172	21.5	166	121	96	33
140	100	3000	665	665	155	430	475	10	182	21.5	166	111	96	33
160	110	3000	720	720	165	475	535	10	200	28.5	166	96	96	43
180	125	3000	775	775	175	515	585	10	222	28.5	166	86	96	43
200	140	3000	815	815	190	535	615	10	237	32	166	76	96	48
220	160	3000	-	960	205	635	720	10	280	32	166	71	96	48
250	180	3000	-	1000	220	659	744	10	300	38	166	71	96	57
280	200	3000	-	1105	270	744	839	10	330	38	166	61	96	57
320	220	3000	-	1210	300	815	935	10	375	44	166	36	96	66

主要尺寸见 6 至 17 页

AL = 活塞直径 MM = 活塞杆直径 X\* = 行程长度

X\*max = 最大行程长度

Main dimensions see pages 10 to 21 and/or pages 24 to 35

AL=Piston ∅

MM=Piston rod ∅

X\*=Stroke length

X\*max=MAX Stroke length

## 位置测量系统 position measurement system

拥有500bar抗压力强度的位置测量系统无接触和绝对式工作。这种位置测量系统的原理基于磁致伸缩效应。工作中由于两个磁场的相遇而产生一个扭矩脉冲。这个脉冲在测量杆内部的导波板条上从测点传输到传感器头。传输时间恒定, 并且几乎与温度无关。它与磁铁的位置成比例, 因此成为位置实际值的衡量尺寸, 并在传感器中被转换成直接的模拟或数字输出信号。

The position measurement system that is pressure-resistant up to 500 bar works in a contactless and absolute way. The basis of this position measurement system is the magneto-strictive effect. Here, the coincidence of two magnetic fields triggers a torsional impulse. This pulse runs on a wave guide inside the scale from the measuring point to the sensor head. The running time is constant and almost independent of temperatures. It is proportional to the position of the magnet and hence a measure for the actual position value and is converted within the sensor into a direct analog or digital output.

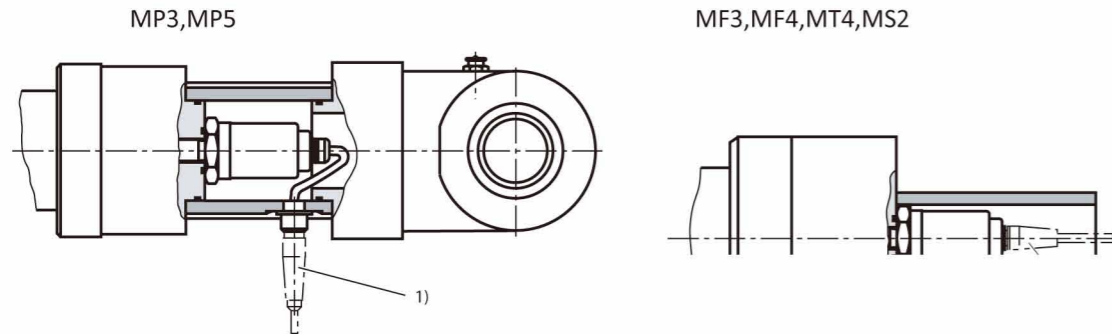
### 技术数据 (元件在超出所给数据范围应用时请咨询!)

### Technical data (For applications outside these parameters, please consult us!)

工作压力 Operating pressure	bar	350
	V	0 至 10
模拟输出	负载阻抗 Load resistance	kΩ ≥ 5
Analog output	分辨率 Resolution	无限 Unlimited
模拟输出	负载阻抗 Load resistance	mA 4 至 20
Analog output	分辨率 Resolution	Ω 0 至 500
数字输出	分辨率 Resolution	SSI 24 Bit Gray 编码 SSI 24 bit gray-coded
Digital output	测量方向 Direction of measurement	向前 Asynchronously forward
线性 Linearity	模拟 Analog	% ≤ ±0.02% (基于测量长度)(referred to measurement length)
(绝对精度)	数字 Digital	mm 最小 min ±0.05
(absolute accuracy)		% ≤ ±0.01% (基于测量长度)(referred to measurement length)
重复精度		mm 最小 min ±0.04
Reproducibility		% ±0.001(基于测量长度)(referred to measurement length)
滞环 Hysteresis		mm 最小 min ±0.0025
		% ≤ 0.004
供电电压	VDC	24 (±10 %, 在模拟输出时)(±10 % with analog output)
Supply voltage	电流消耗 Current consumption	mA 100
	剩余波度 Residual ripple	% s-s ≤ 1
	VDC	24 (+20 %/-15 %, 在数字输出时)(+20 %/-15 % with digital output)
	电流消耗 Current consumption	mA 70
	剩余波度 Residual ripple	% s-s ≤ 1
保护形式	管子和法兰 Pipe and flange	IP67
Protection class	传感器电子元件 Sensor electronics	IP65
工作温度 Operating temperature	传感器电子元件 Sensor electronics	°C -40~+75
温度系数	电压 Voltage	ppm/°C 70
Temperature coefficient	电流 Current	ppm/°C 90

## 位置测量系统 Position measurement system

### 安装方式 Overview mounting types:



1) 用于模拟输出:  
6 极柱 Amphenol - 电缆插座,  
物料号 R900072231  
(电缆插座不在供货范围内, 必须单独订购)

1) For analog output:  
6-pole Amphenol mating connector material no. R900072231  
(Mating connector is not included in the scope of delivery,  
must be ordered separately)



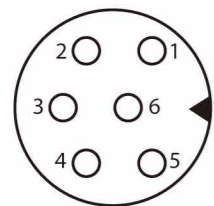
1) 用于数字输出:  
7 极柱 Amphenol - 电缆插座  
物料号 R900079551  
(电缆插座不在供货范围内, 必须单独订购)

1) For digital output:  
7-pole Amphenol mating connector material no. R900079551  
(Mating connector is not included in the scope of delivery,  
must be ordered separately)



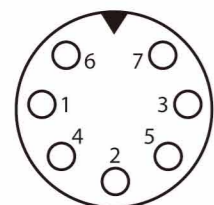
### 接口配置 Pinout

位置测量系统 (模拟输出)  
Position measurement system (analog output)  
元件插头 (对着极柱端面看)  
Connector (view to pin side)



极柱 pin	电缆 cable	信号 / 电流 Signal / current	信号 / 电压 Signal / voltage
1	灰色 gray	4...20 mA	0-10V
2	粉色 pink	Gnd	Gnd
3	黄色 yellow	n.c.	n.c.
4	绿色 green	n.c.	n.c.
5	棕色 brown	+24 VDC (± 0%)	+24 VDC (± 1.0%)
6	白色 white	Gnd	Gnd

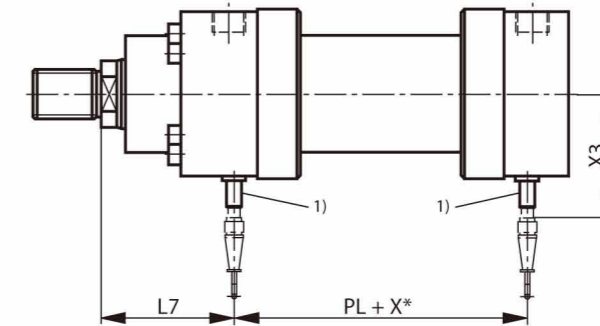
位置测量系统 (数字输出)  
Position measurement system (digital output)  
元件插头 (对着极柱端面看)  
Connector (view to pin side)



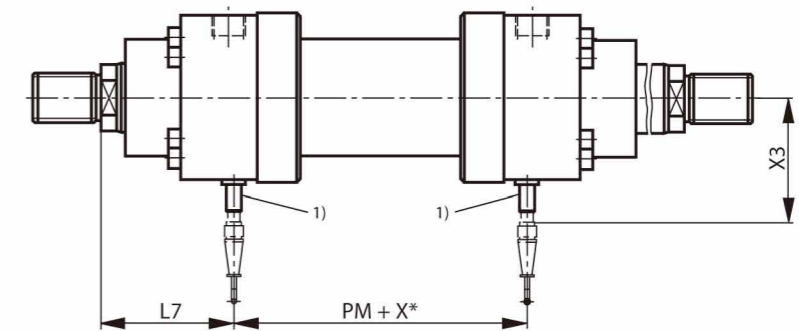
极柱 pin	电缆 cable	信号 / SSI Signal / SSI
1	灰色 gray	数据 (-) data (-)
2	粉色 pink	数据 (+) data (+)
3	黄色 yellow	节拍 (+) clock (+)
4	绿色 green	节拍 (-) clock (-)
5	棕色 brown	+24 V DC (+20%/- 15%)
6	白色 white	0 V
7	-	n. c.

### 接近开关 Proximity switch

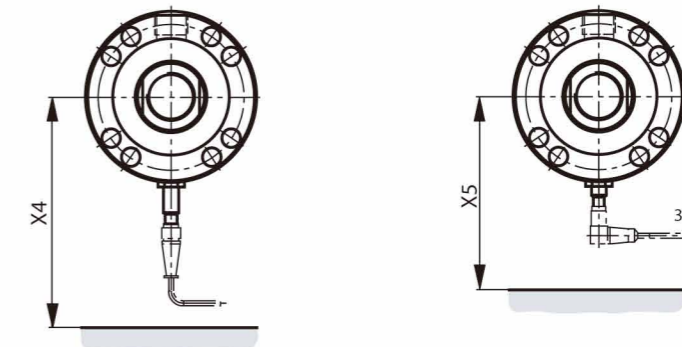
FCDH1



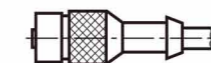
FCDH1



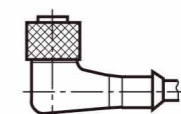
### 安装方式 Overview mounting types:



电缆插座带 5 米长电缆 物料号:R90002651 (电缆插座不在供货范围内, 必须单独订购)  
Connection cable 5 m, material no. R90002651  
(Mating connector is not included in the delivery and must be ordered separately.)



电缆插座, 弯角型带 5 米长电缆 (电缆引出的位置不确定) 物料号:R9000 21404 (电缆插座不在供货范围内, 必须单独订购)  
Angled mating Connector cable 5 m (mating cable putout position is not insure) material no. R900021404  
(Mating connector is not included in the delivery and must be ordered separately.)



## 接近开关 Proximity switch

### 尺寸 MF4 (公称尺寸, 单位mm) Dimensions (nominal dimensions in mm)

AL	MM	PL	PM	L7	X3	X4	X5
∅	∅						
40	28	112	112	83	94	170	125
50	36	110	110	92	98	175	130
63	45	125	125	104	103	180	135
80	56	138	138	108	108	185	140
100	70	161	161	129	116	195	150
125	90	189	189	143	126	205	160
140	100	209	209	161	146	225	180
160	110	228	228	191	151	230	185
180	125	254	254	204	159	235	190
200	140	264	264	212	166	245	200
220	160	310	310	250	177 <sup>2)</sup>	255	.. <sup>3)</sup>
250	180	310	310	274	187 <sup>2)</sup>	265	.. <sup>3)</sup>
280	200	369	369	285	189 <sup>2)</sup>	275	.. <sup>3)</sup>
320	220	415	415	295	209 <sup>2)</sup>	285	.. <sup>3)</sup>

主要尺寸见6至17页

AL = 活塞直径 MM = 活塞杆直径 X\* = 行程长度

1) = 接近开关总是在油口的对面

2) = 活塞直径 220-320mm, 接近开关不露出

3) = 活塞直径 220-320mm, 弯角型电缆插座不可能

Main dimensions see pages 6 to 17

AL=Piston ∅

MM=Piston rod ∅

X\*=Stroke length

1)=The proximity switch is always located opposite of the line connection

2)=Piston ∅ 220 - 320 mm, Proximity switch not protruding

3)=Piston ∅ 220 - 320 mm, Angled mating connector not possible

## 接近开关 Proximity switch

感应式接近开关作为可靠的终端检查元件应用于液压缸。它是通过发出信号对安全装置、联锁装置和/或其它的机器功能的终端位置进行监控的重要元件。这种抗500 bar 高压的接近开关为无接触和无触点工作。因此无磨损。从安全的角度出发为防止接近开关拧入太深而加了保险。因此开关距离不能调整。在带有接近开关(选项"E")的款式中, 液压缸在两端都配置接近开关。

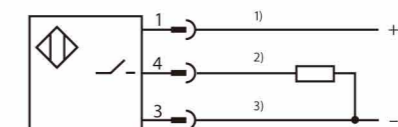
Inductive proximity switches are used as reliable end position control for hydraulic cylinders. They are an important element in order to safely and exactly monitor safety equipment, locking mechanisms and/or other machine functions in their end position by issuing signals. The proximity switch that is high pressure resistant up to 500 barter function in a contactless-form. Sequentially, they are wear-free. For safety reasons, the proximity switch is protected against excessive screwing in. The switching distance can therefore not be changed. On versions with proximity switch, the cylinders are provided with proximity switches on both ends.

技术数据 (元件在超出所给数据范围应用时请咨询!)

Technical data (For applications outside these parameters, please consult us!)

功能类型 Function type	bar	PNP 常开式 PNP normally open contact
允许的压力 Admissible pressure	VDC	500
工作电压 Operating voltage	%	10 ... 30
	包括剩余波 Including residual ripple V	≤15
电压损失 Voltage drop	VDC	≤ 1.5
测量工作电压 Rated operating voltage	mA	24
测量工作电流 Rated operating current	mA	200
空运行电流 Idle current	μA	≤ 8
剩余电流 Residual current	%	≤ 10
重复精度 Repeatability	%	≤ 5
滞环 Hysteresis	°C	≤ 15
周围温度范围 Ambient temperature range	%	-25 ... + 80
温度漂移 Temperature drift	Hz	≤ 10
开关频率 Switching frequency		1000
保护形式 Protection class	活跃面 Active area	IP 68 按 DIN 40050 IP 68 according to DIN 40050
	接近开关 Proximity switch	IP 67 按 DIN 40050 IP 67 according to DIN 40050
壳体材料 Housing material		材料号 1.4104 Material no. 1.4104

## 接口配置 Pinout



- 1) 棕色 brown
- 2) 黑色 black
- 3) 蓝色 blue

## 测量接头 Bleeding / screwed coupling

用于压力测量和放气。用于安装在放气/测量接口中。测量接头带有单向阀功能, 亦即, 它也可以在压力作用下连接。

供货内容:

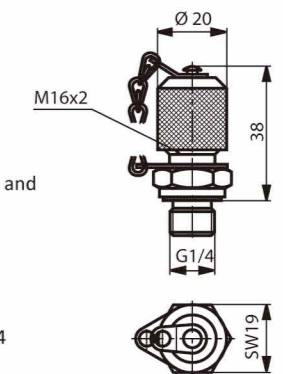
By default, a patented safety bleeding device against unintended turning out in head and base is delivered for all cylinders.

测量接头 AB 20-11/K1 带丁腈橡胶密封圈 物料号 R900009090

测量接头 AB 20-11 /K1 V 带氟橡胶密封圈 物料号 R900001264

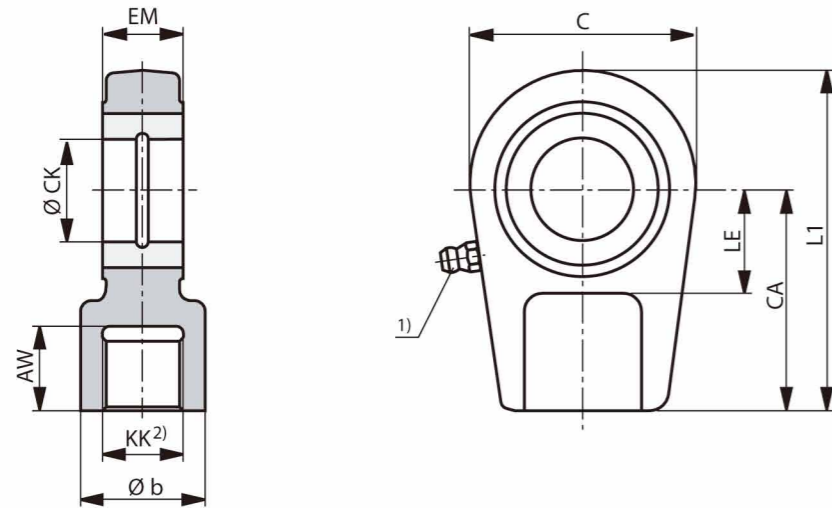
THREADED COUPLING AB 20-11/K1 G1/4 with seal ring of NBR material no. R900009090

THREADED COUPLING AB 20-11/K1V G1/4 with seal ring of FKM material no. R900001264



## 摆动吊环头 CSA/Plain clevis CSA

尺寸 MF4 (公称尺寸, 单位mm) Dimensions (nominal dimensions in mm)



AL	型号	AW	b	C	CA	CK	EM	KK	LE	L1	m <sup>3)</sup>
Φ						H 11	-0.4				kg
40	CSA 16	17	28	56	50	25	23	M16x 1.5	25	80	0.43
50	CSA 22	23	34	64	60	30	28	M22x 1.5	30	94	0.7
63	CSA 28	29	44	78	70	35	30	M28x 1.5	40	112	1.1
80	CSA 35	36	55	94	85	40	35	M35x 1.5	45	135	2.0
100	CSA 45	46	70	116	105	50	40	M45x1.5	55	168	3.3
125	CSA 58	59	87	130	130	60	60	M58x 1.5	65	200	5.5
140	CSA 65	66	93	154	150	70	55	M65x 1.5	75	232	8.6
160	CSA 80	81	125	176	170	80	60	M80x2	80	265	12.2
180	CSA 100	101	143	206	210	90	65	M100x2	90	323	21.5
200	CSA 110	111	153	230	235	100	70	M 110x2	105	360	27.5

AL = 活塞直径

1) = 锥形润滑头, 按 DIN 71412 A 型

2) = 摆动吊环头必须总是靠在活塞杆的轴肩上拧紧

3) m = 摆动吊环头的重量

AL=Piston Ø

1)=Lubricating nipple, cone head form A according to DIN 71412

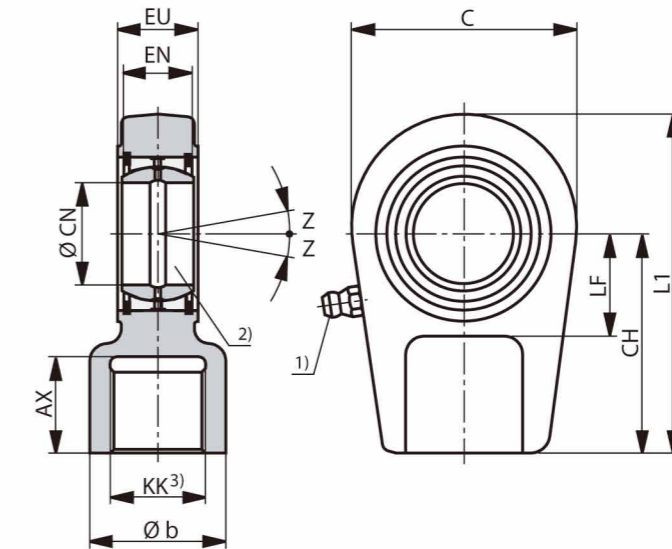
2) =The self-aligning clevis must always be screwed against the shoulder of the piston rod.

3) m=Weight self-aligning clevis

## 铰接吊环头 CGA/Plain clevisCGA

尺寸 MF4 (公称尺寸, 单位mm) Dimensions (nominal dimensions in mm)

AL-Ø40-280mm



AL	型号	AX	b	C	CH	CN	EN	EU	KK	L1	LF	Z	m <sup>4)</sup>
Φ								-0.4					kg
40	CGA 16	17	28	56	50	25 <sub>-0.010</sub>	20 <sub>-0.12</sub>	23	M16x1.5	80	25	8°	0.43
50	CGA 22	23	34	64	60	30 <sub>-0.010</sub>	22 <sub>-0.12</sub>	28	M22x 1.5	94	30	7°	0.7
63	CGA 28	29	44	78	70	35 <sub>-0.012</sub>	25 <sub>-0.12</sub>	30	M28x 1.5	112	40	7°	1.1
80	CGA 35	36	55	94	85	40 <sub>-0.012</sub>	28 <sub>-0.12</sub>	35	M35x1.5	135	45	7°	2.0
100	CGA 45	46	70	116	105	50 <sub>-0.012</sub>	35 <sub>-0.12</sub>	40	M45x 1.5	168	55	7°	3.3
125	CGA 58	59	87	130	130	60 <sub>-0.015</sub>	44 <sub>-0.15</sub>	50	M58x 1.5	200	65	7°	5.5
140	CGA 65	66	93	154	150	70 <sub>-0.015</sub>	49 <sub>-0.15</sub>	55	M65x 1.5	232	75	6°	8.6
160	CGA 80	81	125	176	170	80 <sub>-0.015</sub>	55 <sub>-0.15</sub>	60	M80x2	265	80	6°	12.2
180	CGA100	101	143	206	210	90 <sub>-0.020</sub>	60 <sub>-0.20</sub>	65	M100x2	323	90	6°	21.5
200	CGA110	111	153	230	235	100 <sub>-0.020</sub>	70 <sub>-0.20</sub>	70	M 110x2	360	105	7°	27.5
220	CGA120	125	176	265	265	110 <sub>-0.020</sub>	70 <sub>-0.20</sub>	80	M120x3	407.5	115	6°	40.7
250	CGA120	125	176	265	265	110 <sub>-0.020</sub>	70 <sub>-0.20</sub>	80	M120x3	407.5	115	6°	40.7
280	CGA130	135	188	340	310	120 <sub>-0.020</sub>	85 <sub>-0.20</sub>	90	M130x3	490	140	6°	76.4
320	-	-	-	-	-	-	-	-	-	-	-	-	-

AL = 活塞直径

1) = 锥形润滑头, 按 DIN 71412 A 型

2) = 所属的销 Ø m6; 在免维护铰接轴承中所属的销 Ø j6

3) = 铰接吊环头必须总是靠在活塞杆的轴肩上拧紧

4) m = 铰接吊环头的重量

AL=Piston Ø

1)=Lubricating nipple, cone head form A according to DIN 71412

2) =Related bolt Ø m6;

Related bolt Ø j6 with maintenance-free plain bearing

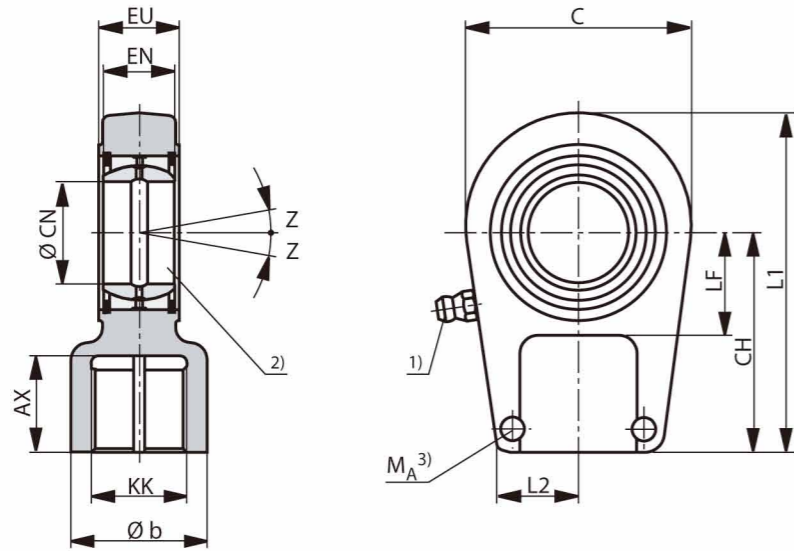
3) MA=Tightening torque The self-aligning clevis must always be screwed against the shoulder of the piston rod.

4) m=Weight self-aligning clevis

## 铰接吊环头 CGAK/Plain clevis CGAK

尺寸 MF4 (公称尺寸, 单位mm) Dimensions (nominal dimensions in mm)

AL- $\phi$ 40-280mm



AL $\Phi$	型号 type	AX	b	C	CH	CN	EN	EU -0.4	KK	L1	L2	LF	M <sup>3)</sup> Nm	Z	m <sup>4)</sup> kg
40	CGAK 16	7	28	56	50	25 <sub>-0.010</sub>	20 <sub>-0.12</sub>	23	M 6x 1.5	80	20	25	9	8°	0.43
50	CGAK 22	23	34	64	60	30 <sub>-0.010</sub>	22 <sub>-0.12</sub>	28	M22x1.5	94	22	30	20	7°	0.7
63	CGAK 28	29	44	78	70	35 <sub>-0.012</sub>	25 <sub>-0.12</sub>	30	M28x1.5	112	27	40	20	7°	1.1
80	CGAK 35	36	55	94	85	40 <sub>-0.012</sub>	28 <sub>-0.12</sub>	35	M35x1.5	135	35	45	40	7°	2.0
100	CGAK 45	46	70	116	105	50 <sub>-0.012</sub>	35 <sub>-0.12</sub>	40	M45x1.5	168	42	55	80	7°	3.3
125	CGAK 58	59	87	130	130	60 <sub>-0.015</sub>	44 <sub>-0.15</sub>	50	M58x1.5	200	54	65	160	7°	5.5
140	CGAK 65	66	93	154	150	70 <sub>-0.015</sub>	49 <sub>-0.15</sub>	55	M65x 1.5	232	57	75	160	6°	8.6
160	CGAK 80	8	125	176	170	80 <sub>-0.015</sub>	55 <sub>-0.15</sub>	60	M80x2	265	66	80	160	6°	12.2
180	CGAK 100	101	143	206	210	90 <sub>-0.020</sub>	60 <sub>-0.20</sub>	65	M100x2	323	76	90	160	6°	21.5
200	CGAK110	111	153	230	235	100 <sub>-0.020</sub>	70 <sub>-0.20</sub>	70	M110x2	360	85	105	300	7°	27.5
220	CGAK 120	125	176	265	265	110 <sub>-0.020</sub>	70 <sub>-0.20</sub>	80	M120x3	407.5	96	115	500	6°	40.7
250	CGAK 120	125	176	265	265	110 <sub>-0.020</sub>	70 <sub>-0.20</sub>	80	M120x3	407.5	96	115	500	6°	40.7
280	CGAK 130	135	188	340	310	120 <sub>-0.020</sub>	85 <sub>-0.20</sub>	90	M130x3	490	112	140	500	6°	76.4
320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

AL= 活塞直径

1)= 锥形润滑头, 按 DIN 714 12 A 型

2)= 所属的销  $\phi$  m6; 在免维护铰接轴承中所属的销  $\phi$  j6

3) MA = 拧紧力矩 铰接吊环头必须总是靠在活塞杆的轴肩上拧紧。之后, 必须将夹紧螺栓用给出的拧紧力矩拧紧。

4) m = 铰接吊环头的重量

AL=Piston  $\phi$

1)=Lubricating nipple, cone head form A according to DIN 71412

2) =Related bolt  $\phi$  m6;

Related bolt  $\phi$  j6 with maintenance-free plain bearing

3) MA=Tightening torque The self-aligning clevis must always be screwed against the shoulder of the piston rod. Then, the clamping screws must be tightened to the specified torque.

4) m=Weight self-aligning clevis

## Y-HG1型冶金设备标准液压缸

## Y-HG1 series metallurgical standard hydraulic cylinders

## Y-HG1型冶金设备标准液压缸

## Y-HG1 series metallurgical standard hydraulic cylinders

### 用途与特征/Applications and features

Y-HG1型冶金设备标准液压缸, 为双作用单活塞杆液压缸, 具有结构简单、工作可靠、装拆方便、易于维修、可带缓冲装置及连接方式多样等特点, 广泛应用于钢铁、铸造、锻造等冶金行业。

The Y-HG1 series metallurgical standard hydraulic cylinders are double acting single piston rod cylinders. Its features are simple in structure, reliable in operation, convenient in assemble and disassemble easy in maintenance, etc.. In addition, there are several varieties of connecting mode and can be provided with the cushioning devices, and it is widely used in the metallurgical field such as steel, found and smithing etc.

### 型号说明/ model code

Y-HG1-E D/d x S L 5-H L1 Q T2  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪)

①冶金标准液压缸-Y

②双作用活塞杆第一类型-HG1

③压力等级 E-16MPa

④缸径/杆径 (mm) /bore/rod (mm)

⑤行程(mm)/Stroke (mm)

⑥进、出口连接: L-螺纹连接(用于D $\leq$ 220);F-法兰连接(用于D $\geq$ 250)

Connecting mode of inlet & outlet ports:L-Connecting by thread (using at D $\leq$ 220);

F-Connecting by flange (using at D $\geq$ 250)

⑦安装方式: 见表1/Mounting styles: See table 1

⑧附加位置: H-带缓冲; B-带平衡阀 Adjunctive position: H-with cushion; B-with balance valve

⑨杆端结构: L1-外螺纹; L2-内螺纹

Rod end structure: L1-male thread; L2-female thread

⑩工作介质: O-液压油; W-高水基(乳化液等介质)Working medium: O-hydraulic oil; W-Abundant water (Mixed water)

⑪)工作温度:T1--10°C~+80°C Working temperature: T1--10°C~+80°C

### 技术参数/ Technical Parameter:

工作压力: 16MPa / Working pressure: 16MPa

工作介质: 矿物油 / Working medium: mineral hydraulic oil

工作温度: -10°C~+80°C /Working temperature: -10°C~+80°C

运动速度: <0.5m/s, / Moving speed: <0.5m/s

注: 以上参数如有特殊要求, 请另行注明/If you have any especial requirement to the above data, please note it.

代号Code	安装方式 Mounting mode	代号Code	安装方式Mounting mode
J	基本型/Standard	E	后端单耳环 end single eye ring E1:带关节轴承 with articulating bearing E2:带轴套/with bushing
F1	前端矩形法兰 Head side rectangle flange		
F2	后端矩形法兰/ End side rectangle flange	Z1	前端耳轴(用于D $\leq$ 100)/Head side trunnion(for D $\leq$ 100)
F3	前端圆法兰/ Head side circinal flange	Z2	中间耳轴/Middle side trunnion
F4	后端圆法兰/ End side circinal flange	Z3	后端耳轴/End side trunnion
F5	前端方形法兰/ Head side square flange	J1	轴向脚架/Vertical to axis foot type
F6	后端方形法兰/End side square flange	J2	切向脚架 <sup>①</sup> /parallel to axis foot type

注①: 安装方式是切向脚架 (J2) 是非标产品

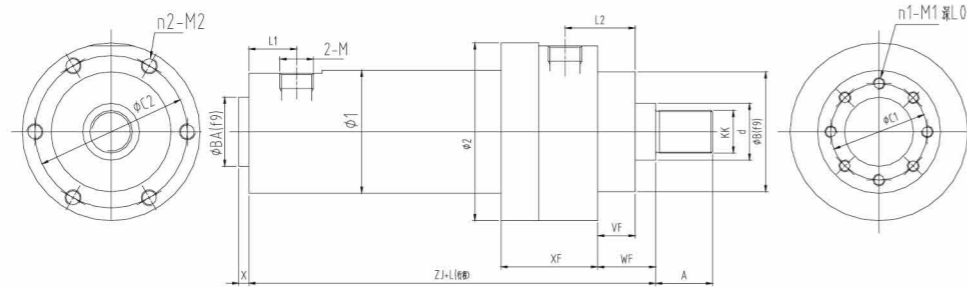
②: F1, F2, F5, F6用于D $\leq$ 100

Notes①: The mounting mode is non-standard

②: F1, F2, F5, F6used at D $\leq$ 100



## 1. 基本型/Standard



D	ψ	d	KK	A	M	∅B	∅BA	∅C1	∅C2	∅1	∅2	VF	WF	XF	ZJ	X	L1	L2	L0	n1-M1	n2-M2
40	1.46	22	M16×1.5	22	M18×1.5	48	20	42	66	54	80	19	32	69	190	8	26	44	12	8-M6	8-M8
	2	28	M20×1.5	28																	
50	1.46	28	M20×1.5	28	M18×1.5	55	30	50	75	63.5	90	24	38	86	205	8	18	61	12	8-M6	8-M8
	2	36	M27×2	36																	
63	1.46	36	M27×2	36	M27×2	70	38	60	90	76	108	29	45	79	224	10	25	52	12	8-M8	8-M10
	2	45	M33×2	45																	
80	1.46	45	M33×2	45	M27×2	86	55	75	112	95	134	36	54	78	250	10	36	58	13	8-M10	8-M12
	2	56	M42×2	56																	
90	1.46	50	M42×2	56	M27×2	100	55	80	132	108	158	36	55	89	270	10	43	63	17	8-M12	8-M16
	2	63	M48×2	63																	
100	1.46	56	M42×2	56	M33×2	118	68	95	150	121	175	37	57	95	300	10	47	69	18	8-M12	M8-M16
	2	70	M48×2	63																	
110	1.46	63	M48×2	63	M33×2	132	60	95	165	133	195	37	57	101	310	10	50	73	22	8-M16	8-M16
	2	80	M48×2	63																	
125	1.46	70	M48×2	63	M33×2	150	80	115	184	152	212	37	60	113	325	10	50	85	22	8-M16	8-M16
	2	90	M64×3	85																	
140	1.46	80	M48×2	63	M42×2	165	95	132	200	168	230	37	62	109	335	10	53	74	22	8-M16	8-M16
	2	100	M80×3	95																	
150	1.46	80	M64×3	85	M42×2	175	105	140	215	180	245	41	64	117	350	10	54	85	22	8-M16	8-M16
	2	105	M80×3	95																	
160	1.46	90	M64×3	85	M42×2	190	110	150	230	194	265	41	66	133	370	10	59	91	26	8-M20	8-M20
	2	110	M80×3	95																	
180	1.46	100	M80×3	95	M48×2	200	110	160	250	219	280	41	70	147	410	15	65	98	27	8-M20	8-M20
	2	125	M80×3	95																	
200	1.46	110	M80×3	95	M48×2	215	120	170	280	245	310	45	75	169	450	15	65	115	27	8-M20	8-M20
	2	140	M100×3	112																	
220	1.46	125	M100×3	112	M48×2	240	140	200	310	273	340	45	80	178	490	20	75	123	36	8-M24	12-M20
	2	160	M100×3	112																	
250	1.46	140	M100×3	112	∅40	280	160	220	340	299	380	64	96	208	550	25	80	145	36	8-M24	12-M24
	2	180	M125×4	125																	
280	1.46	160	M125×4	125	∅40	300	180	240	370	325	410	64	100	236	600	30	80	162	36	8-M24	12-M24
	2	200	M125×4	125																	
320	1.46	180	M125×4	125	∅40	360	200	310	430	377	470	71	108	270	660	35	80	190	36	12-M24	16-M24
	2	220	M160	160																	

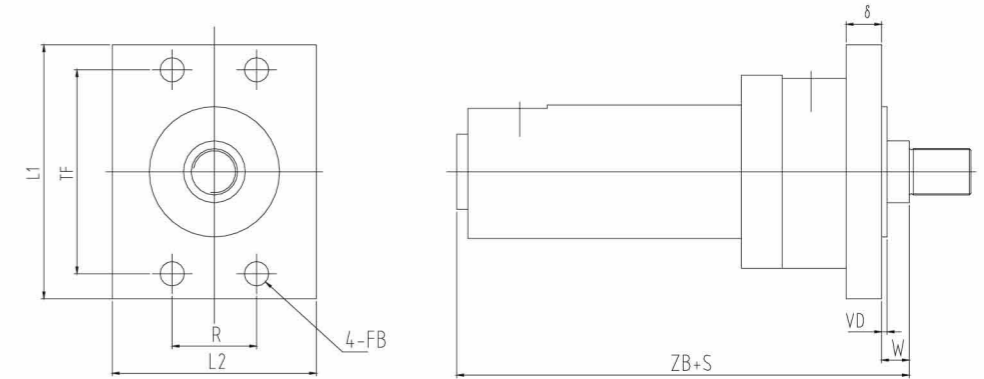
## Y-HG1型冶金设备标准液压缸

### Y-HG1 series metallurgical standard hydraulic cylinders

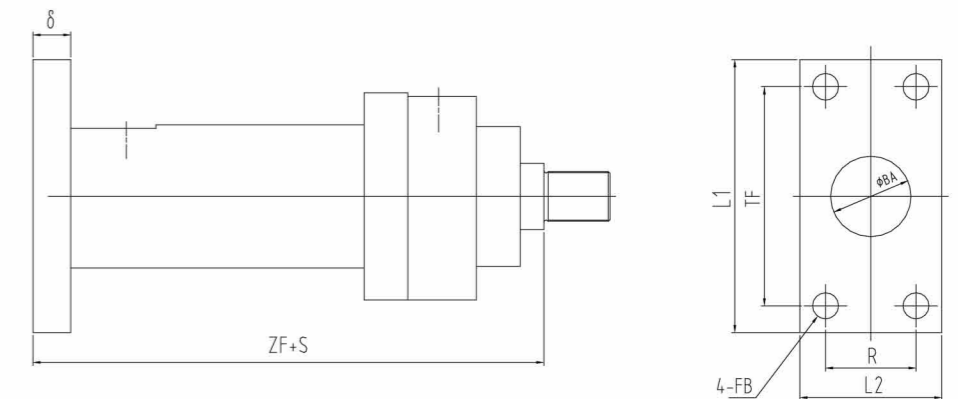
## 2. 头、尾部长方形法兰安装连接尺寸Y-HG1-ED/d-※※F1/ F2-※L1※

Head and end side rectangle flange connection and mounting dimension Y-HG1-ED/d-※※F1/ F2-※L1※

### F1前法兰式/Head side flange type



### F2后法兰式/End side flange type

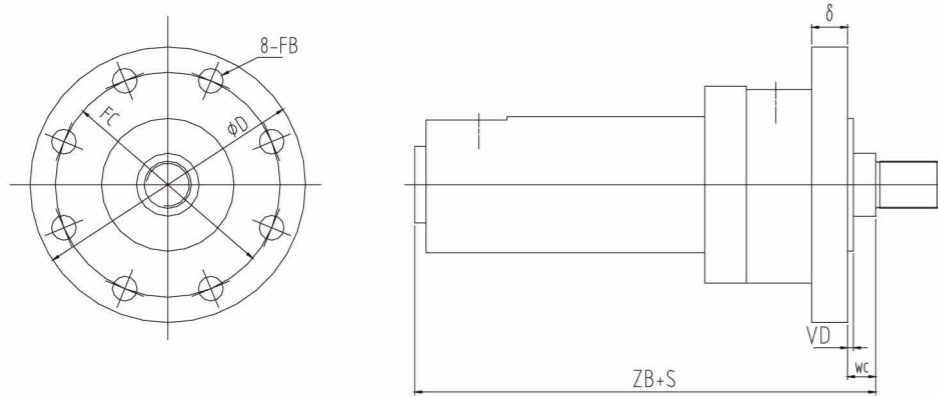


D	40	50	63	80	90	100	110	125
∅	16	20	25	32	32	32	32	32
FB	9	11	13.5	17.5	22	22	22	22
TF	98	116.4	134	152.5	168	184.8	200	217.1
R	F1	40.6	48.2	55.5	63.1	120	120	140
	F2					70	76.5	83
L1	F1	120	140	165	190	210	230	245
	F2			164	200			
L2	F3	86	95	115	140	170	170	205
	F4	65	75	85	100	115	120	130
ZB	198	213	234	260	280	310	320	335
ZF	206	225	249	282	302	332	342	357
VD	3	4	4	4	4	5	5	5
W	16	18	20	22	23	25	25	28

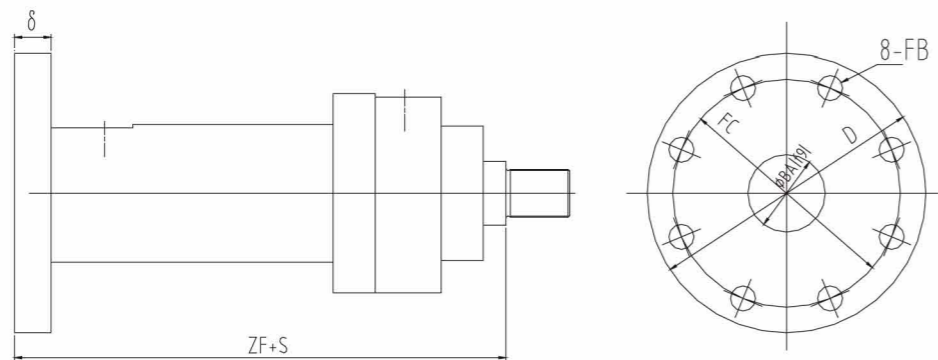
注：其它尺寸参照基本型/Note: other dimensions are same as standard

3.头、尾部圆形法兰安装连接尺寸Y-HG1-ED/d-※※F3/ F4-※L1※  
Head and end circular flange connection and mounting dimension Y-HG1-ED/d-※※F3/ F4-※L1※

F3前法兰式/Head side flange type



F4后法兰式/End side flange type

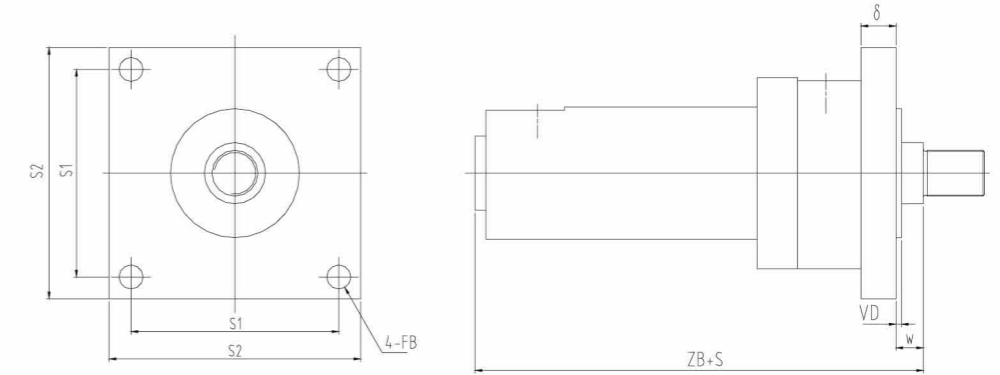


D	40	50	63	80	90	100	110	125	140	150	160	180	200	220	250	280	320	
φ	16	20	25	32	32	32	32	32	32	36	36	36	40	40	60	60	63	
FB	9	11	13.5	17.5	22	22	22	22	22	22	22	26	26	33	33	39	39	
D	F1	126	150	175	200	240	255	275	295	310	325	345	375	405	445	485	525	595
	F2	126	150	175	200	228	245	260	280	300	310	325	360	390	435	475	525	585
FC	F3	106	126	145	165	195	210	230	250	265	280	300	325	355	390	430	470	530
	F4	106	126	145	165	185	200	215	235	255	265	280	310	340	380	420	470	520
ZB	198	213	234	160	280	310	320	335	345	360	380	425	465	510	575	630	695	
ZF	206	225	249	282	302	322	342	357	370	386	406	450	490	535	606	660	723	
VD	3	4	4	4	5	5	5	5	5	5	5	5	5	5	8	8	8	
WC	16	18	20	22	23	25	25	28	30	28	30	34	35	40	40	44	45	

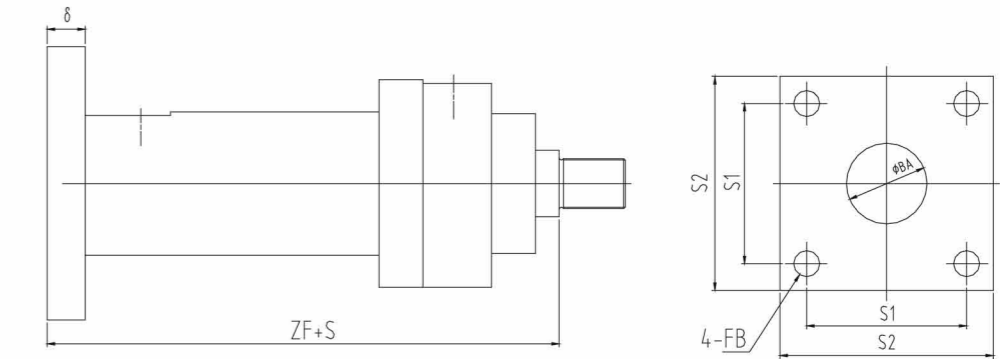
注：其它尺寸参照基本型/Note: other dimensions are same as standard

4.头、尾部正方形安装连接尺寸Y-HG1-ED/d-※※F5/ F6-※L1※  
Head and end side square flange connection and mounting dimension Y-HG1-ED/d-※※F5/ F6-※L1※

F5前法兰式/Head side flange type



F6后法兰式/End side flange type

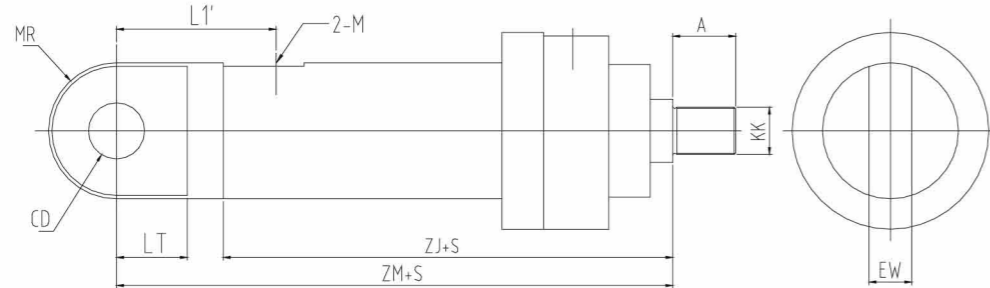


D	40	50	63	80	90	100	110	125	
φ	16	20	25	32	32	32	32	32	
S1	F5	95	115	132	155	170	190	215	224
	F6	65	80	95	110	120	135	145	160
S2	F5	115	140	160	190	210	230	255	265
	F6	90	110	130	150	165	180	190	205
ZB	198	213	234	260	280	310	320	335	
ZF	206	225	249	282	302	332	342	357	
VD	3	4	4	4	4	5	5	5	
W	16	18	20	22	23	25	25	28	

注：其它尺寸参照基本型/Note: other dimensions are same as standard

## 5. 尾部单耳环安装连接尺寸 Y-HG1-ED/d-※※E1/ E2-※L1※

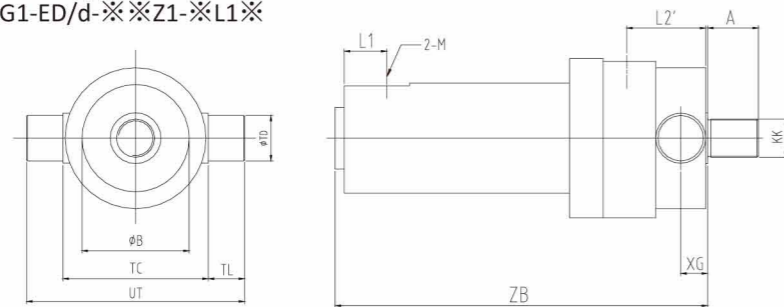
Head and end side square flange connection and mounting dimension Y-HG1-ED/d-※※E1/E2※L1※



D	40	50	63	80	90	100	110	125	140	150	160	180	200	220	250	280	320
ZJ	190	205	224	250	270	300	310	325	335	350	370	410	450	490	550	600	660
ZM	231	257	289	332	360	395	405	428	445	475	505	550	615	670	773	845	930
L1'	67	70	90	118	133	142	145	153	163	179	194	205	230	255	303	325	350
LT	25	32	40	50	58	63	67	71	78	84	90	100	112	140	160	175	200
EW	18	22	26	30	35	38	38	50	58	58	62	68	72	72	88	88	92
MR	27	32	38	47.5	54	60.5	66.5	76	84	90	97	109.5	122.5	136.5	149.5	162.5	188.5
CD	20	25	30	40	45	50	50	60	70	70	80	90	100	110	120	140	160
A	见基本型表格																
KK	见基本型表格																

注：其它尺寸参照基本型/Note: other dimensions are same as standard

## 6. 头部摆轴安装连接尺寸 Y-HG1-ED/d-※※Z1-※L1※

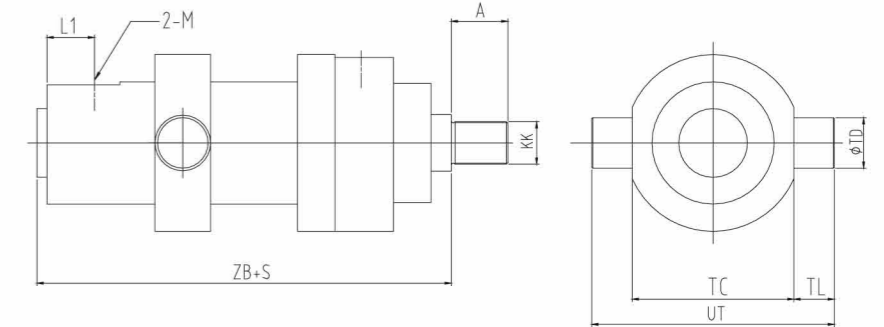


D	40	50	63	80	90	100
ZB	198	213	234	260	280	310
XG	19.5	23	27	31.5	30	29.5
L2'	50	67	59	67	77	87
UT	122	145	170	199	217	240
TC	90	105	120	135	145	160
TL	16	20	25	32	36	40
øB	48	55	70	86	100	118
øTD	20	25	32	40	45	50
A	见基本型表格					
KK	见基本型表格					

注：其它尺寸参照基本型/Note: other dimensions are same as standard

## 7. 中部摆轴安装连接尺寸 Y-HG1-ED/d-※※Z2-※L1※

Head and end side turion connection and mounting dimension Y-HG1-ED/d-※※F5/ F6-※L1※

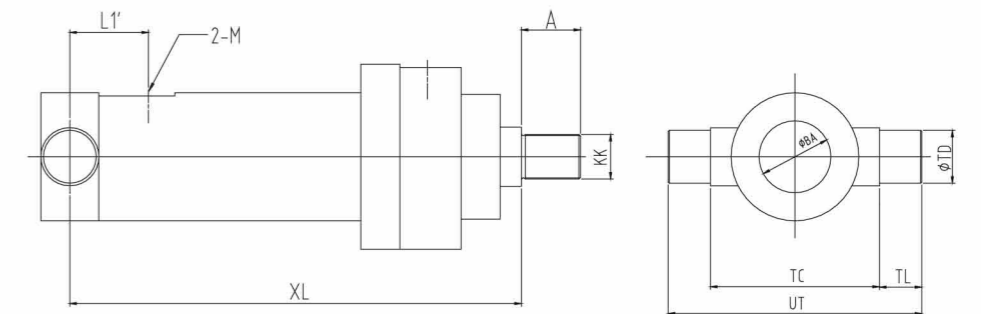


D	40	50	63	80	90	100	110	125	140	150	160	180	200	220	250	280	320
ZB	198	213	234	260	280	310	320	335	345	360	380	425	465	510	575	630	695
UM	122	145	170	199	217	240	265	295	320	345	366	405	455	510	570	640	720
TM	90	105	120	135	145	160	175	195	210	225	240	265	295	330	370	420	470
TL	16	20	25	32	36	40	45	50	55	60	63	70	80	90	100	110	125
TD	20	25	32	40	45	50	55	63	70	75	80	90	100	110	125	140	160
A	见基本型表格																
KK	见基本型表格																

注：其它尺寸参照基本型/Note: other dimensions are same as standard

## 8. 尾部摆轴安装连接尺寸 Y-HG1-ED/d-※※Z3-※L1※

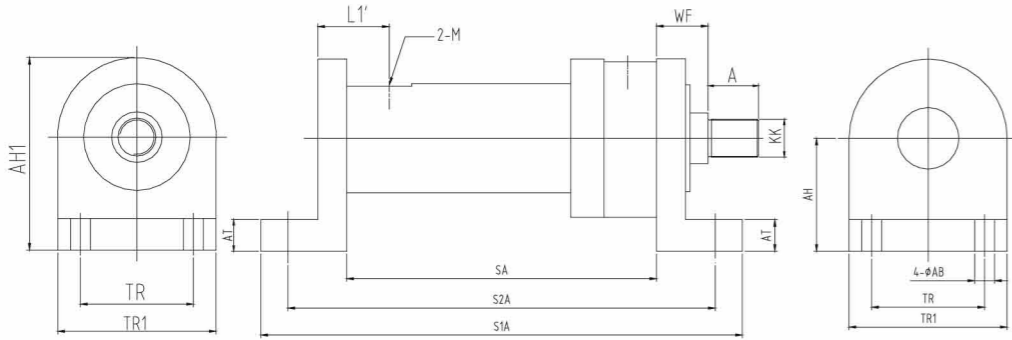
end side turion connection and mounting dimension Y-HG1-ED/d-※※F5/ F6-※L1※



D	40	50	63	80	90	100	110	125	140	150	160	180	200	220	250	280	320
XL	202.5	220	242	272.5	295	327.5	340	350	372.5	390	412.5	457.5	502.5	547.5	615	672.5	742.5
L1'	38.5	33	43	58.5	68	74.5	80	84	90.5	94	101.5	112.5	117.5	132.5	145	152.5	162.5
UT	122	145	170	199	217	240	265	295	320	345	366	405	455	510	570	640	720
TC	90	105	120	135	145	160	175	195	210	225	240	265	295	330	370	420	470
TL	16	20	25	32	36	40	45	50	55	60	63	70	80	90	100	110	125
BA	20	30	38	55	55	68	60	80	95	105	110	110	120	140	160	180	200
TD	20	25	32	40	45	50	55	63	70	75	80	90	100	110	125	140	160
A	见基本型表格																
KK	见基本型表格																

注：其它尺寸参照基本型/Note: other dimensions are same as standard

9.底座安装连接尺寸Y-HG1-ED/d-※※J1-※L1※  
leg connection and mounting dimension Y-HG1-ED/d-※※F5/ F6-※L1※



D	40	50	63	80	90	100	110	125	140	150	160	180	200	220	250	280	320
S <sub>1</sub> A	268	287	329	366	405	433	443	485	503	516	564	610	645	710	774	850	952
SA	158	167	179	196	215	243	253	265	273	286	304	340	375	410	454	500	552
S <sub>2</sub> A	228	247	279	316	345	383	415	433	433	446	484	530	565	620	684	750	832
WF	32	38	45	54	55	57	57	60	62	64	66	70	75	80	96	100	108
L1'	42	38	50	68	75	75	79	82	88	90	95	105	105	120	136	140	143
TR	45	55	70	90	100	125	145	155	170	185	190	200	220	250	300	320	370
TR1	80	90	110	134	158	175	195	212	230	245	260	280	310	340	380	410	470
AH	60	70	85	105	116	125	135	150	155	165	175	190	205	225	255	275	310
AT	18	22	28	35	35	35	35	35	40	40	40	45	45	50	60	65	70
AH1	100	115	140	172	195	213	233	256	270	290	305	330	360	395	445	480	545
AB	13.5	13.5	17.5	17.5	22	22	22	26	26	26	33	33	33	39	39	45	52
A	见基本型表格/Refer to the basic forms																
KK	见基本型表格/Refer to the basic forms																

注：其它尺寸参照基本型/Note: other dimensions are same as standard

### 其他特种油缸

### other special hydraulic cylinders

#### 接近开关油缸/The hydraulic cylinder with approach switches

##### 特点:/Features

把接近开关装进前后盖,通过检测缓冲塞和缓冲套的存在,而反映活塞是否到达两端点位置。接近开关选用耐高压系列,所有重要保护功能都已内置,如短路和过载保护,极性反向保护,过电压保护,EMC保护和通电延时等。带接近开关油缸主要是在油缸工作中,提供完全外伸或内缩指示,实现油缸往复自动换向。抗高压型电感式接近开关,具有装置紧凑,安装调试方便,省去运动机构上设计和安装极限开关的繁琐环节,为设计和安装调试提供极大的方便。

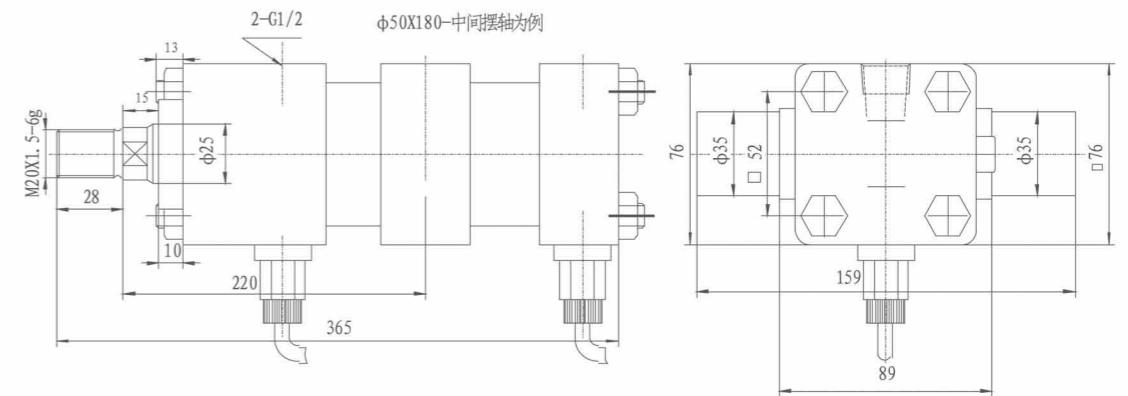
We put the approach switches into anterior and back covers to find that whether the piston had reached to the both endpoints by checking the existence of cushioning plugs. We use the resistive high pressure series approach switches, and put all important protective equipments inside, such as short circuit and over loading protection, reversing polarity protection, over voltage protection, EMC protection and time-lapse electrifying etc. The hydraulic cylinder with approach switches mainly action is that it can offering the information of piston rod absolute holding out or drawing back. The features of resistive high pressure series approach switches are compact in structure, convenient in installing and debugging, leaving out various inconvenient processes such as designing on movement framework and ultimate switches installing. It is providing much convenience for design and debugging.

##### 用途:/Application

主要应用汽车领域、冶金、化工等行业,需要对行程两个端点迅速做出反应的场合。

It is mainly used in the situations which need to quickly act at both endpoints in fields of automobile, metallurgical, chemistry etc.

##### 外形及安装尺寸:/Figures and installing dimensions



## 位移传感器油缸

The hydraulic cylinder with displacement sensor

### 用途:/Applications

主要用于需提高电液位置控制系统精度和力控制系统精度，如油压机、轧机板厚、板宽和板型的控制的场合。

It is mainly used in the situations that need to improve the precision of electrical and hydraulic control systems and force control systems, such as controlling board thickness, board breadth and board figure of hydraulic pressure machines and rolling mill machines.

### 特点:/Features

在四拉杆油缸或C25系列高压油缸（缸径D=50-400）上配置内置式位移传感器，可根据工矿需要准确停位，在电控系统和液压系统的协调配合下，充分发挥液压缸的机械化，自动化功能，实现高速，精确的工业自动控制。

位移传感器是利用磁致伸缩原理进行工作的，当运动的磁铁磁场和传感器内波导管电流脉冲所产生的磁场相交时便产生一个接一个连续不断的应变脉冲，从而感测出活塞的运动位置（如运动速度）。

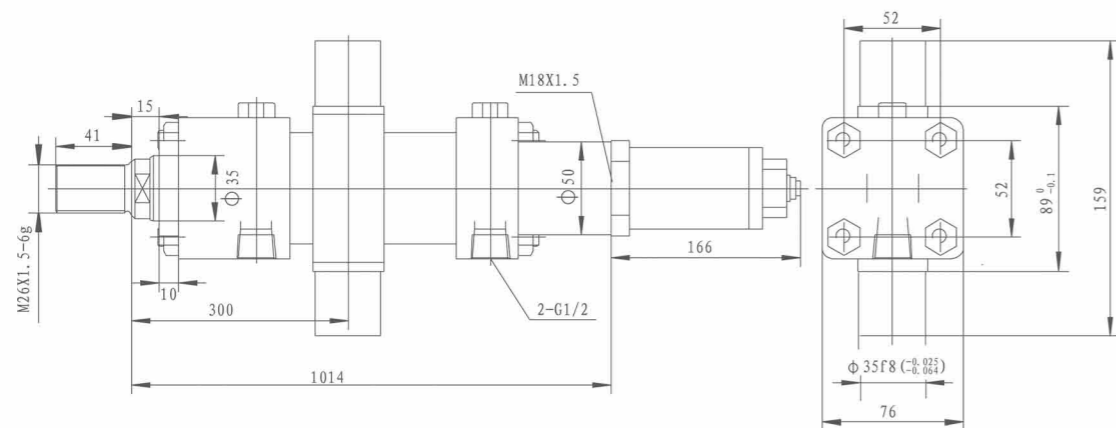
目前我公司选用的传感器有两大类，一种主要采用了进口美国MTS传感器，另一种主要采用了零件进口国内组装的传感器。根据不同功用，位移传感器有多种输出选择。如模拟（位移，速度）输出（电压量或电流量）；SSI数字（位置）输出（二进制或格雷码）；CANBUS数字（位移，速度）输出（CAN总线协议）；PROFIBUS数字（位移，速度）输出（PROFIBUS总线协议）。

Providing the displacement sensor for four-pulling rod hydraulic cylinders and C25 series high pressure hydraulic cylinders(bore D=50-400), could exactly stop as working requirement. Under the cooperation of electrical control system and hydraulic system, could fully exert hydraulic cylinders' capability such mechanization, automatization, to come true the exact and fast automatic control.

The displacement sensor worked at magnetic telescopic theory. When the moving magnetic field touched to the magnetic field came from electric current pulse of the displacement sensor transmission pipe, it can bring out one by one consecutive pulses, to check out the position of piston.

Now, we have two kinds displacement sensor, one is MTS sensor which exported from America, another is assembled with the American parts in domestic company. Basis on the different actions, we have various choices about displacement sensor. Such as simulation(displacement, speed) output(voltage, current); SSI numerical(position) output(binary system code, Gerte code ); CANBUS numerical(displacement, speed) output(CAN bus-agreement); PROFIBUS numerical(displacement, speed) output(PROFIBUS bus-agreement).

### 外形及安装尺寸:/Figures and installing dimensions



## 带磁性开关油缸

The hydraulic cylinder with magnetic switches

### 用途:/Applications

可用于汽车、冶金、化工等行业，特别适用于需要在行程中间某位置反馈信号的场合。

It can be used in the fields of automobile, metallurgical, chemistry an so on, but especially in the situations that need receive signs at some points of stroke.

### 特点:/Features

油缸活塞上加磁环，缸筒外部加磁性开关，磁性开关位置可调，数量不限（一般1-3个）。可在行程范围内任意位置多点反馈信号，完成较复杂的动作过程。

We put the magnetic rings at the piston and added switches to the bore,you can adjust the magnetic switches position and amounts(1-3) by your requirements. It can send verious signs at any positions of stroke, thus achiving difficut actions.

## 超高压油缸GYG45×245

Super pressure hydraulic cylinder GYG45×245

单作用超高压油缸,工作压力70MPa,并同时配套高压动力单元.

This is single action super pressure hydraulic cylinder, its working pressure is 70 MPa, and we provide high-pressure dynamical systems.



可根据用户需要开发各种高压(100MPa以下)油缸及动力单元.

We can design and manufacture various high-pressure (under 100MPa) hydraulic cylinders and dynamical systems.

## 气液转换产品 Air-liquid exchanging products

### 气液增压缸 Air-liquid increased pressure cylinders

#### 用途:/Applications

适用于只有气源而需要大的输出力的场合

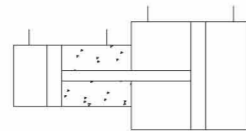
It is suited used in the position that need large output force but only has pressed air.

#### 特点:/Features

以压缩空气为动力，推动活塞杆，活塞杆进入增压腔将油增压后推动内置油缸的活塞，从而在活塞杆端获得大的输出力。可广泛用于只有气源而无油源且需要较大的输出力的场合。本产品尺寸紧凑，外形美观。

It is powered by pressed air. The pressed air pushing piston, and made the rod into increased pressure cavity to increase the hydraulic oil pressure, then we accept the larger output force by the piston rod. It is widely used in the position that need large output force but only has pressed air. Its features are compact in structure, beautiful figure.

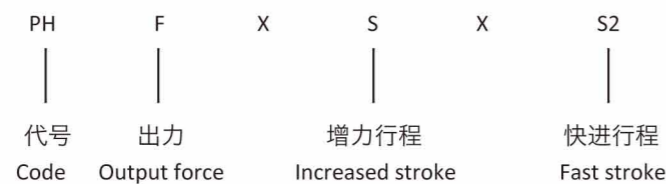
#### 图形符号:/Drawing symbol



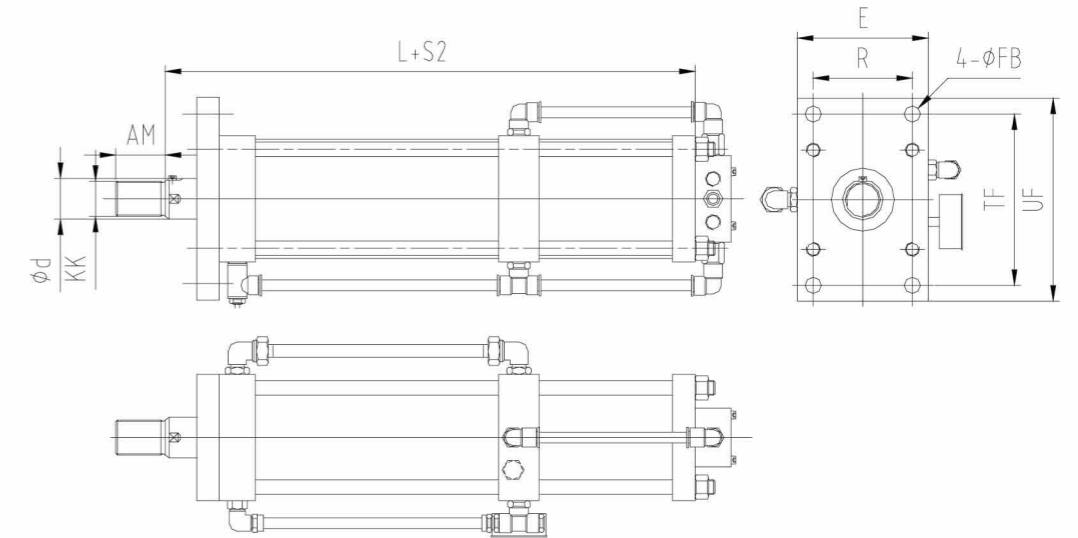
#### 基本参数/Standard parameter

缸径/Bore	100	125	140	160	180
参数 /Data	100	125	140	160	180
活塞理论输出力/Theory output force	5T	10T	15T	30T	50T
油箱容积/Oil box cubage	0.9L	1.5L	1.9L	2.2L	2.4L
增力行程/ Increased stroke	5mm/10mm/15mm				
安装方式/Installing mode	竖直安装/Installing vertical				
工作介质/Working medium	N46 N68				
工作温度/Working temperature	-25°C~+80°C				

#### 型号说明/Model code



#### 外形及安装尺寸/Installing dimensions



缸径 Bore	出力 Force	KK	AM	φd	I			UF	TF	E	R	φFB	S1		
					增力行程/Stronger stroke								增力行程/Stronger stroke		
					5	10	15						5	10	15
100	5T	M24×2	55	32	569	618	668	200	165	120	90	16	67	116	166
125	10T	M39×2	55	45	588	656	726	225	190	145	110	18	90	158	228
140	15T	M48×2	55	55	603	683	763	240	205	160	125	18	97	177	257
160	30T	M64×2	55	70	654	779		260	225	180	145	18	142	267	
180	50T	M72×2	55	80	691			280	245	200	145	18	179		

## 夹具用气液增压器 The air-liquid supercharger used on clamp

### 用途:/Applications

适用于只有气源而需要大的输出力的场合  
It is suited used in the position that need large output force but only has pressed air.

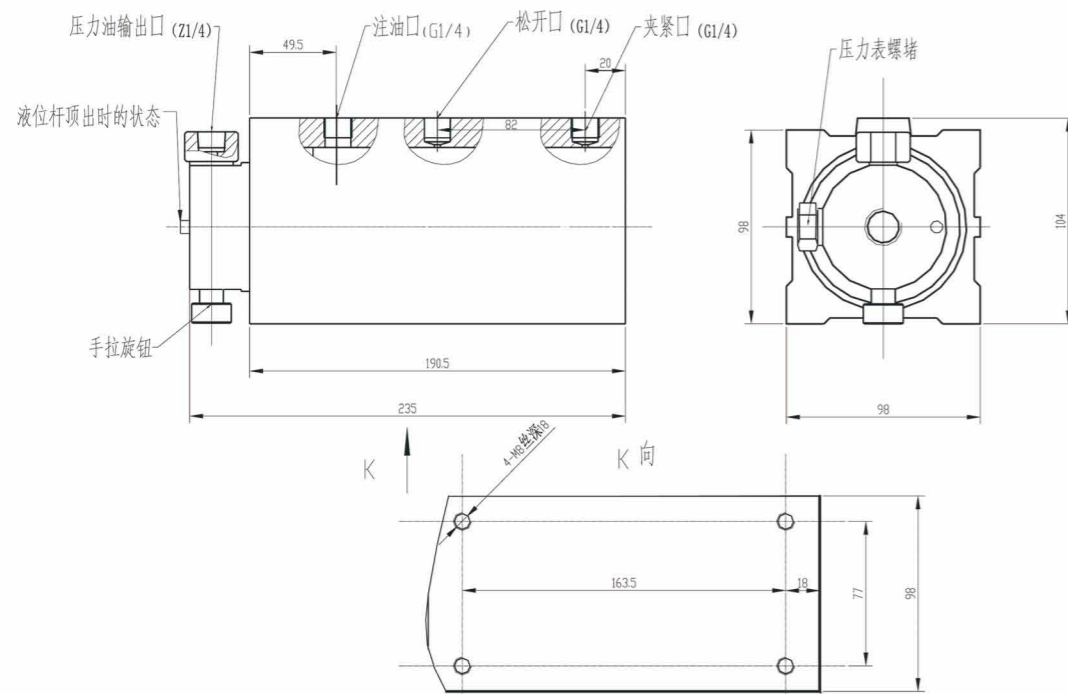
### 特点:/Features

以压缩空气为动力，推动活塞杆，活塞杆进入增压腔将油增压后推动内置油缸的活塞，从而在活塞杆端获得大的输出力。可广泛用于只有气源而无油源且需要较大的输出力的场合。本产品尺寸紧凑，外形美观。  
It is powered by pressed air. The pressed air pushing piston, and made the rod into increased pressure cavity to increase the hydraulic oil pressure, then we accept the larger output force by the piston rod. It is widely used in the position that need large output force but only has pressed air. Its features are compact in structure, beautiful figure.

### 主要技术参数:/Mainly technical data

- 1.增加比: 8.2 / Increase pressure ratio 8.2
- 2.最大排油量: 34ml /Max. displacement 34ml
- 3.补油池容量: 66ml / complementarity Oil box cubage 66ml

### 外形及安装尺寸:/Installing dimension



## 气液流体泵 Air-liquid pumps

### 用途:/Applications

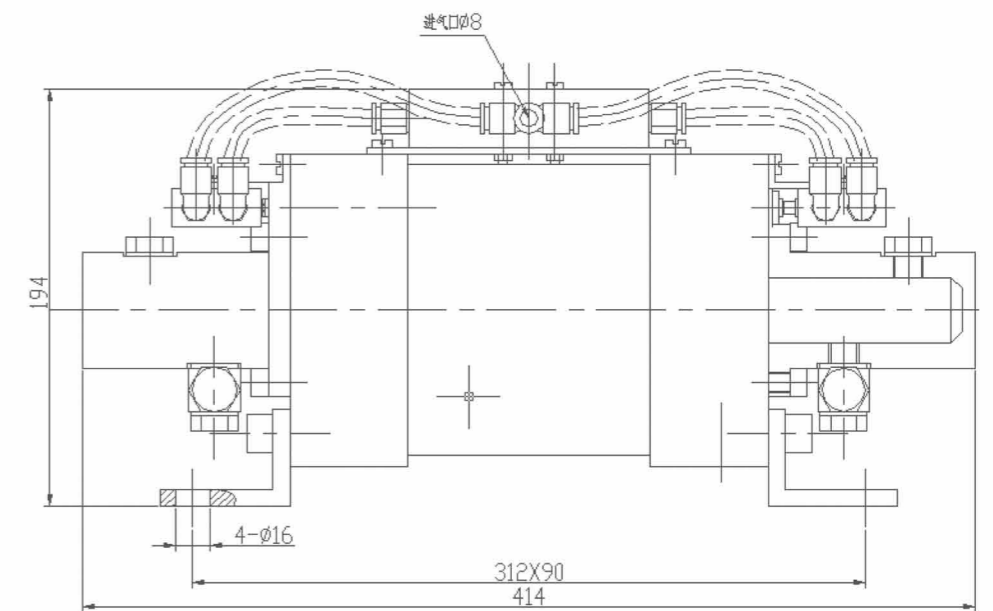
主要用于需要提供高压小流量的气液增压型动力源的场合，可替代普通的高压电动液压站，广泛用于轻工、化工及其它领域。  
The air-liquid pumps mainly used in the position that need support high pressure oil but only has pressed air. It can instead of normal electrical hydraulic systems. Those widely used in light-industry, chemistry and the other fields.

### 特点:/Features

为自动往复型气液增压泵，采用缸体内置行程阀诱导主气控阀为气缸自动换向，并且采用可靠的防气油互串设计，及可靠的高压密封、耐用的气油密封，具有性能稳定可靠，调压及调流简单，寿命持久的优点。  
The air-liquid pumps are automatic circular air-liquid supercharger, they used the inside stroke valve to achieve that air cylinder change direction automatically. We have credible design at avoiding Air-liquid crossing-over, credible high pressure sealing technique and credible Air-liquid sealing. Those features are credible in capability, simple in pressure and flux adjusting and longevity ect.

- 输入压力: 0.5MPa /input pressure 0.5MPa
- 输出压力: > 25MPa /output pressure > 25MPa
- 换向频率50/S Change direction frequency 50/S
- 增压比: 1:50 Increase pressure ratio 1:50

### 外形及安装尺寸/Installing dimension



## 液压系统概况

### General explain of hydraulic system

烟台未来自动装备公司具有20多年的液压系统设计制造经验，公司从了解用户要求入手，采用了从设计、制造、随机安装调试等一条龙跟踪服务的特色经营方式，对设计中存在的问题及时改进，使设计更合理，最大限度地满足用户工况需求。因为专业，使我们的产品更能满足客户需求，高效及时的售后服务，更使得烟台未来的品牌得到了越来越多的长期客户的信赖，也铸就了烟台未来在液压系统行业不可动摇的地位。

只需要客户提供必要的参数如：负载load、速度speed及工况，我们即可为客户设计制造出配套产品。我们在有些行业已经形成了系列配套，并在行业内已经有相当的影响力，如果客户属于以下行业类型我们可以提供更可靠稳定的方案和产品。

Yantai Future specializes in designing and manufacturing hydraulic systems with more than 20 years' experience. Starting with customers' requests, we adopt the unique operating pattern and coordinated process service that start from design, manufacture to installation. It enables us to solve the problems arisen in design in time and meet the requests of customers' working conditions to the greatest extent. Our professional service makes our products better meet customers' needs; efficient after-sale service enables us to get trust from more and more long-term customers, and establishes our unshakeable position in hydraulic industry at the same time.

As long as customers supply necessary parameters such as load、speed and working condition, we can manufacture allocate products according to their special requests. We have formed the series of allocating in some industries, and have a great influence on these industries. If you're in the following industries, we can supply more reliable products for you.

## 工业电炉及冶金行业液压系统

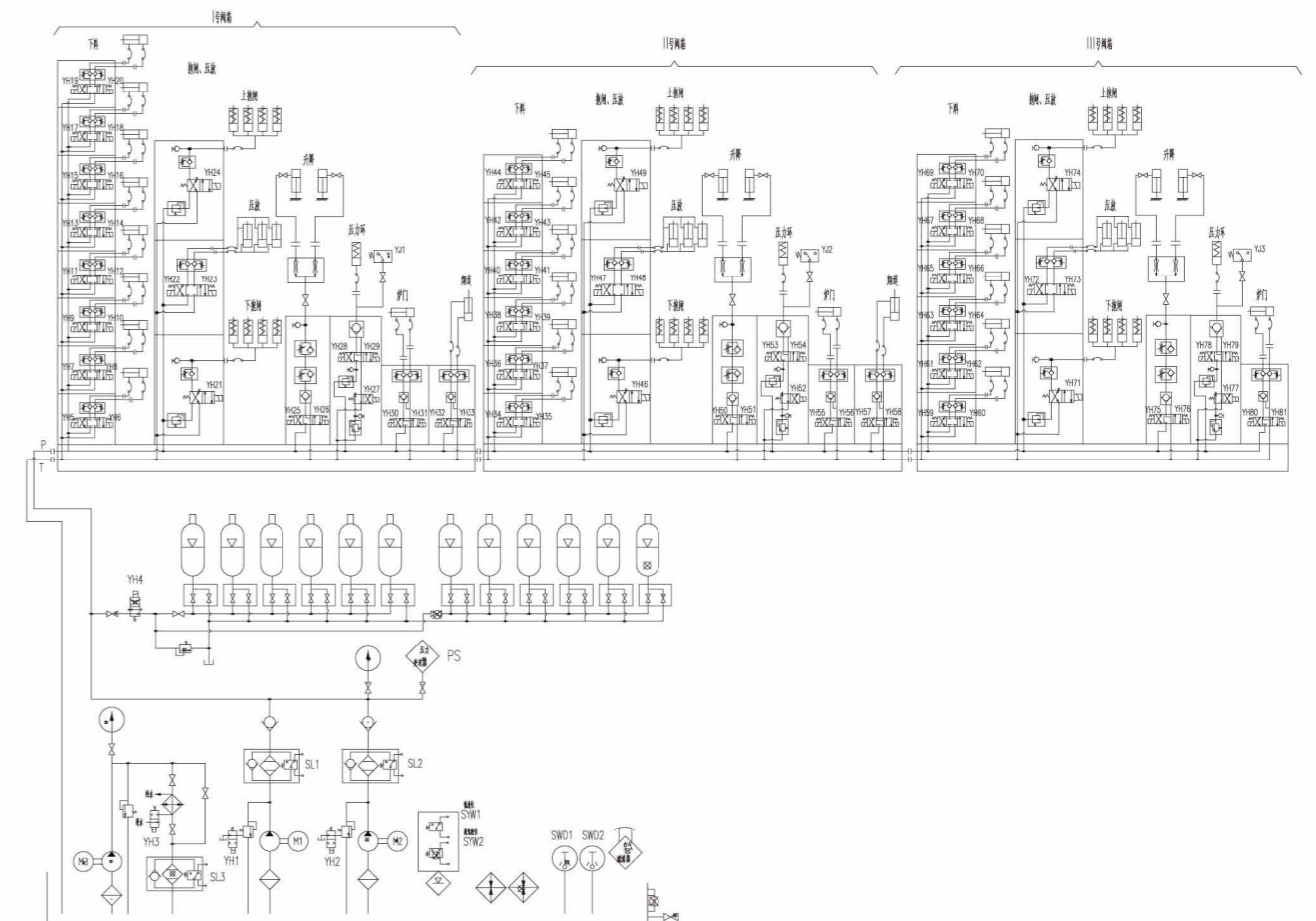
### Hydraulic system for industrial furnace and metallurgical industry

#### 1.工业炉液压系统/Hydraulic system for industrial furnace

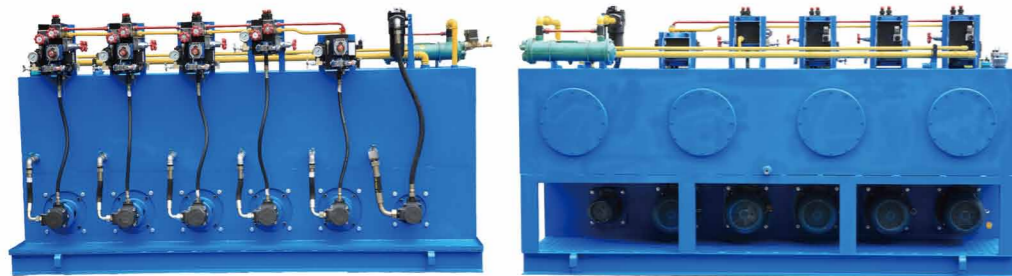
目前国内矿热炉设备正在向大型自动化、封闭式及环保、节能等方向发展。我公司已相继为国内几十家大型铁合金、电石企业，设计生产配套了容量为25000KVA、48000KVA的锰铁、硅铁、铬铁电炉；3500KVA-6300KVA精炼电炉；6300KVA直流电炉；25000KVA工业硅电炉；25000电石炉；16500KVA硅铝铁电炉液压系统。主要控制电极升降、把持、压放等动作。并随主机配套出口至俄罗斯，巴基斯坦等周边国家和地区。

For now, domestic ore furnace equipment is improved to be automatic, closed, environmental and energy-efficient. We has designed and manufactured allocating hydraulic systems of ferromanganese furnace, ferrosilicon furnace, ferrochrome furnace with volume of 25000KVA and 48000KVA, 3500KVA-6300KVA furnace, 6300KVA direct current furnace, 25000KVA industrial silicon furnace, 25000KVA calcium carbide furnace and 16500KVA ferrosilicoaluminum furnace for dozens of ferroalloy and calcium carbide companies in China. The products are mainly designed for controlling the movements of electrode such as holding、lifting、pressing and releasing and etc. They have been exported with main equipments to Russia、Pakistan and other countries and regions.

某硅铁电炉液压原理图：Hydraulic elementary diagram of ferrosilicon furnace







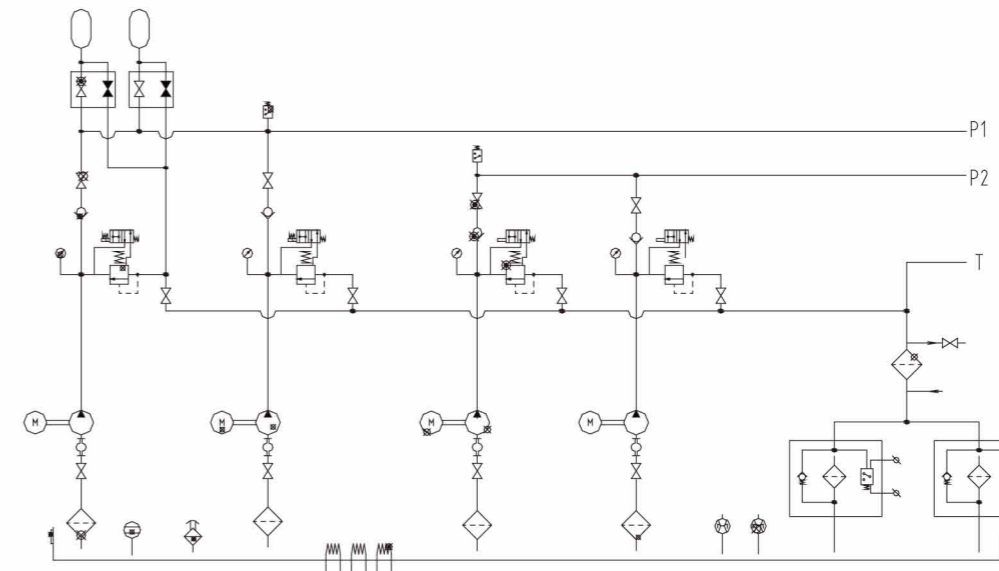
工业电炉液压系统及应用现场 Application of hydraulic system for industrial furnace

#### 2. 钢管生产线液压系统/Hydraulic system for steel pipe production line

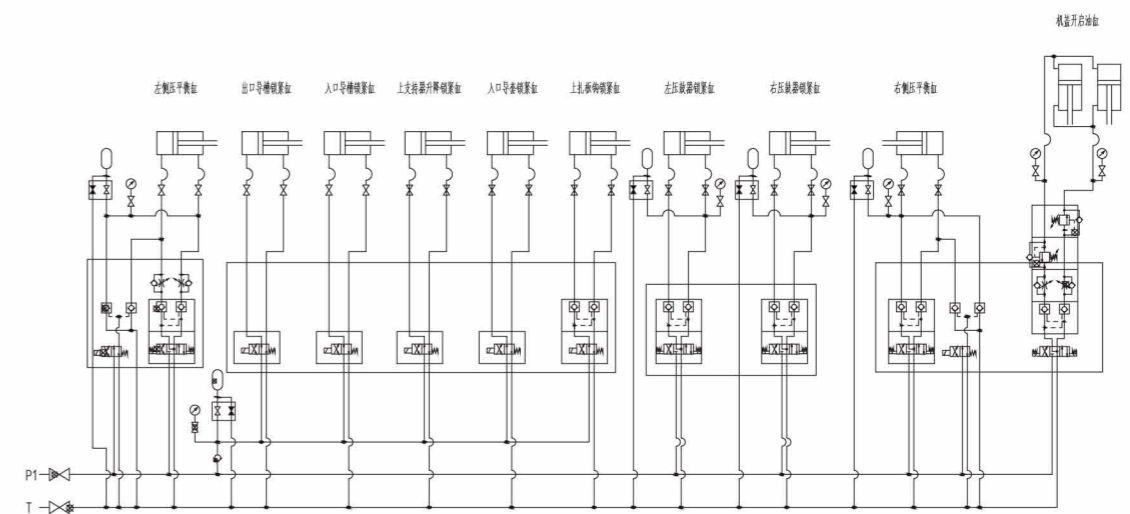
系统能配套完成管坯加热→穿孔→轧管→再加热→定减径→冷却→矫直的全套生产工序。在多次配套的经验基础上,改进增加了液压锁紧装置的数量,有效地抑制了穿孔过程中的受力弹跳,保证了高精度轧制。

The hydraulic system can finish the whole production process of raw material : heating→punching→tube rolling→re-heating→size reducing→cooling→straightening. Based on our rich experiences, we added the quantity of hydraulic lock device to effectively restrain stress bounce during punching process, which also can ensure the high precision rolling.

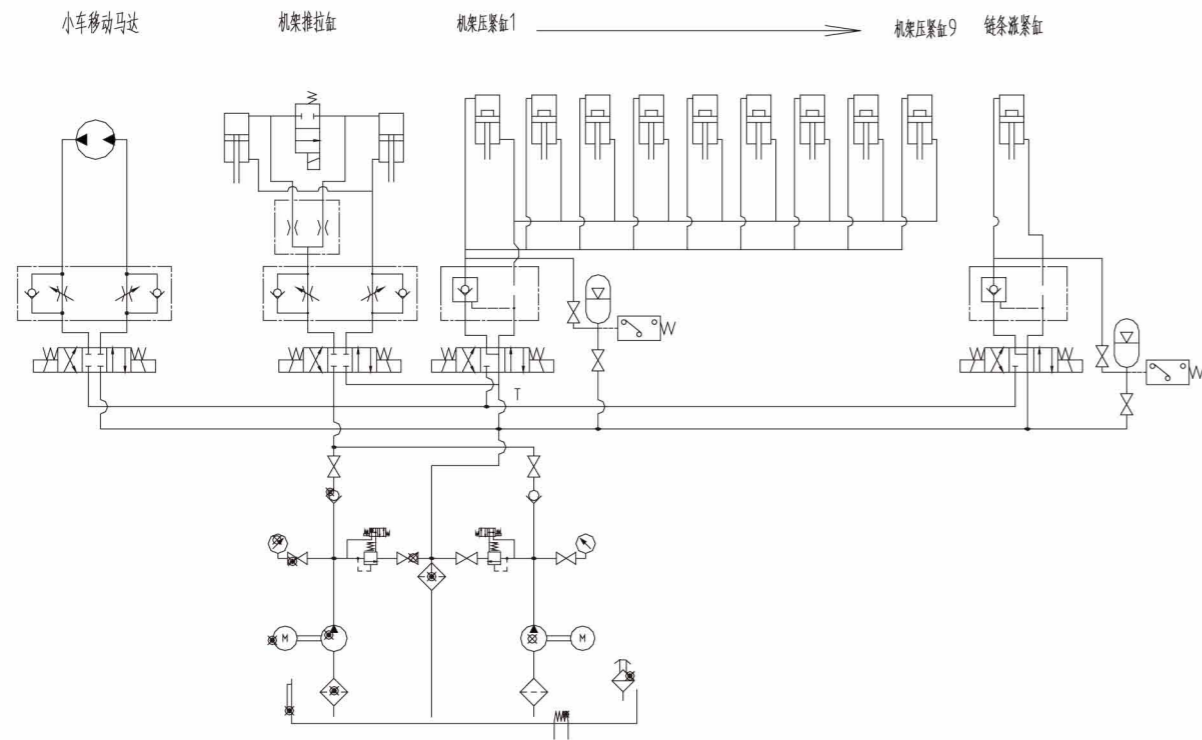
#### 钢管生产线主站液压原理图/Hydraulic elementary diagram of main power unit for steel pipe production line



#### 钢管生产线穿孔机液压原理图/Hydraulic elementary diagram of puncher for steel pipe production line



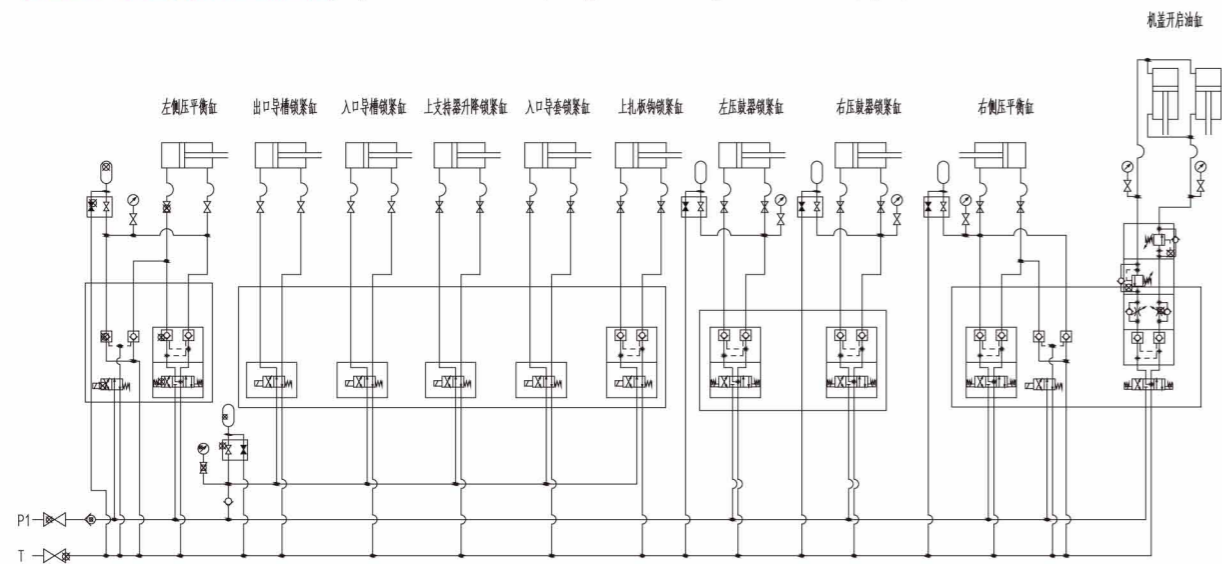
钢管生产线定径机液压原理图/Hydraulic elementary diagram of sizing mill for steel pipe production line



钢管生产线液压系统使用现场 Application of hydraulic system for steel pipe production line



钢管生产线延伸机液压原理图/Hydraulic elementary diagram of elongator for steel pipe production line



### 锻压设备液压系统

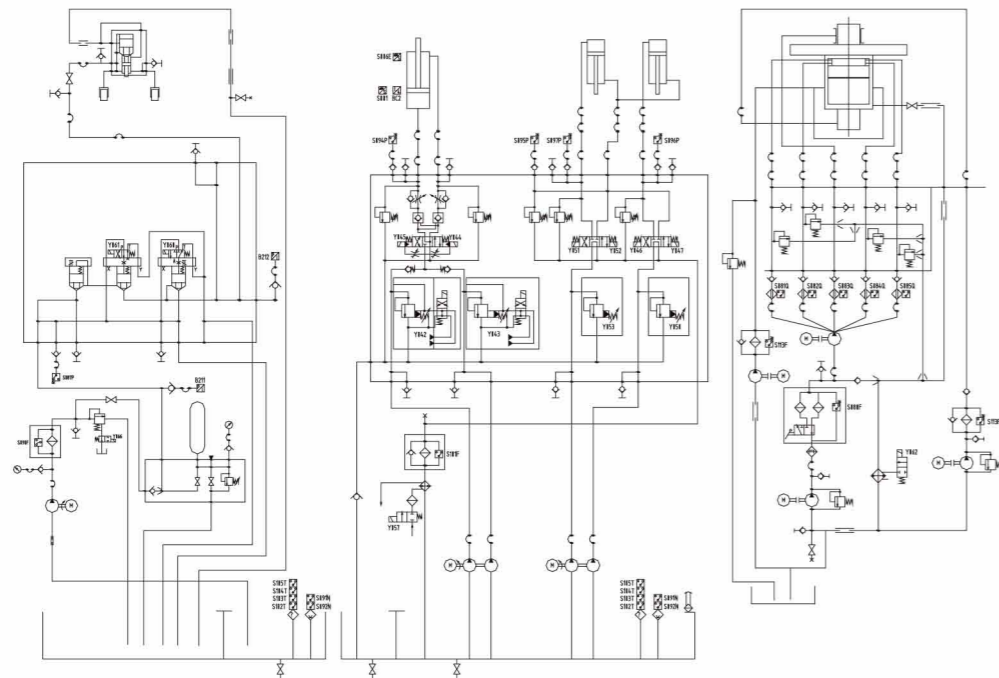
#### Hydraulic system for forging equipment

#### 1. J58、J55系列锻压机械液压系统/Hydraulic system for J58、J55 series forging machinery

J58系列电动螺旋压力机和J55系列离合器式螺旋压力机专用液压系统。螺旋压力机是一种高效、节能的自动化新型锻压设备，广泛用于精锻、模锻、镦粗、挤压、精整等工序。系统安装有压力变送器，随时检测并显示打击力，运行稳定可靠。已形成400t~8000t系列配套。广泛适用于各种工件的各种锻造工况。

Professional hydraulic system for J58 series electric screw press and J55 series clutch screw presses. Screw press is an efficient and energy-saving automatic forging equipment, it's widely used in many processes such as precision forging, die forging, upsetting, extruding and finishing. The hydraulic system is equipped with pressure transmitter to detect and display hitting power at any time, and ensure the reliable operation of equipment. We have formed the allocating products of 400t~8000t, which can be widely used in different kinds of forging conditions of all kinds of work pieces.

螺旋压力机液压原理图: Hydraulic elementary diagram for screw press



螺旋压力机液压系统 Hydraulic system for screw press

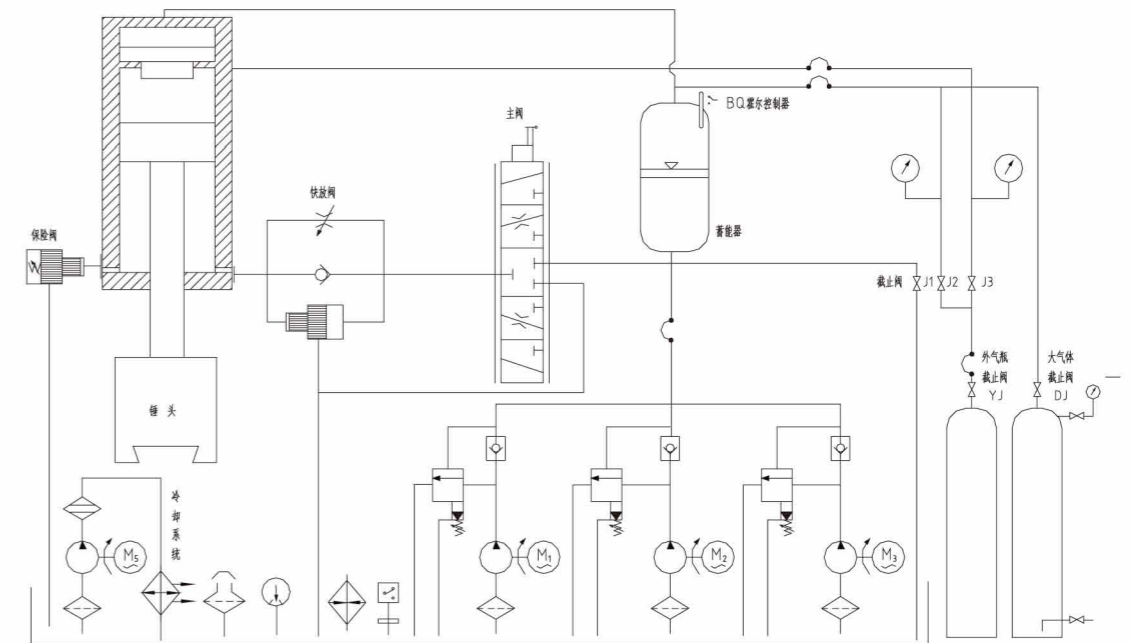


#### 2. 电液驱动锻锤液压系统/Hydraulic system for electro-hydraulic driven forging hammer

我国现在还有很多锻压气锤为蒸汽锤，有的已废置不用，有的仍在服役，能耗高、效率低，产品质量不稳定。在原工装基础上可将其改造为电液气锤或全液锤重新投入高效使用，也可整体替换。电液气锤采用液气复合缸，液压快速提锤，气体膨胀快速打击；全液锤则采用液压缸伸出打击，缩回提锤；这两种效率都很高，一次能耗不到蒸汽锤的1/10，目前我公司已形成应用最广的1吨、3吨、5吨规格的系列配套。可根据客户需求特殊定做水-乙二醇阻燃专用系统。广泛适用于中小工件模锻、自由锻工况。

There are still many forging air-hammers that is with high energy consumption, low efficiency and poor quality in China, some of them have been abandoned, but some of them are still on active service. They can be reformed as electro-hydraulic driven forging air-hammer or hydraulic hammer on the regional frock basis to put into efficient use, and also can be completed replaced. Electro-hydraulic driven forging air-hammer adopts hydraulic & pneumatic compound cylinder, hydraulic pressure lifts hammer and gas expansion hits quickly; hydraulic hammer uses the extension to hit and retraction to lift the hammer. Both of them are very efficient, the energy consumption is less than ten percent of air-hammers. At present, our company has formed the allocating products of 1T、3T and 5T which have been widely used. It also can be manufactured as professional water-ethylene glycol antiflaming system according to customers' special requests. The system is widely applied in die forging and free forging working conditions of medium and small workpiece.

电液驱动锻锤液压原理图/Hydraulic elementary diagram of electro-hydraulic driven forging hammer



电液锤液压系统及应用现场/Application of hydraulic system for electro-hydraulic forging hammer



### 环保设备液压系统

#### Three, Hydraulic system for environmental equipment

##### 1.全自动系列立式压滤机专用液压系统/Special hydraulic system for verti-press EF series

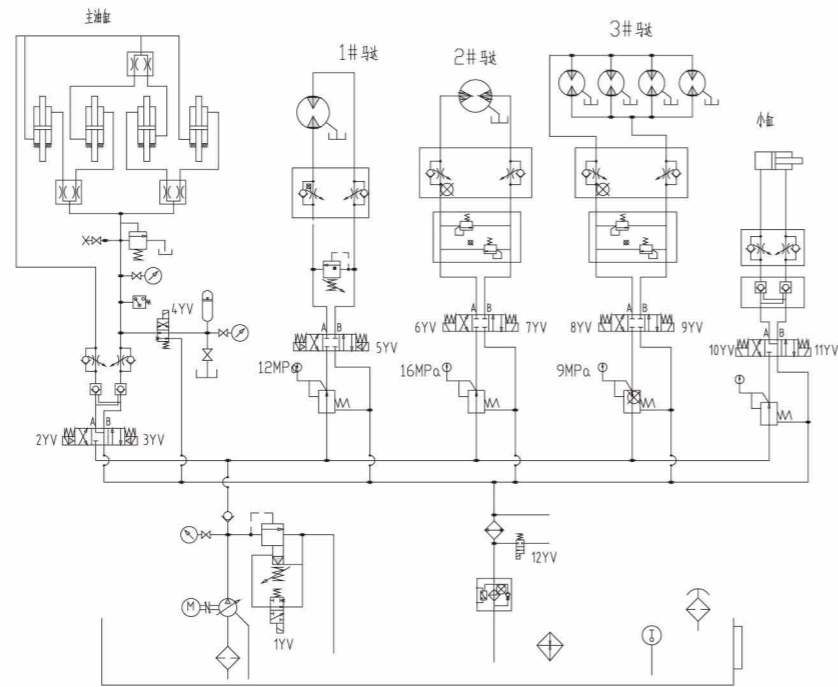
全自动系列立式压滤机为新型固液分离设备，可根据工况需要随意选择隔膜高压压榨压力，水压榨最高可达1.6Mpa，具有自动化程度高，连续过滤，滤饼水分低等特点。目前烟台未来自动装备公司的下属子公司烟台迪特兰纳机械设备有限公司已形成了系列化主机生产能力，主机产品主要规格为12.5~50m<sup>2</sup>（2.5 m<sup>2</sup>滤板系列）、60~144m<sup>2</sup>（6 m<sup>2</sup>滤板系列）。

液压系统主要控制油缸驱动滤板开合、压榨，马达驱动滤布卸料，滤布张紧及纠偏等动作。采用电磁比例控制，同步精度高，动态稳定性好，已为矿山、有色冶炼、纯碱、医药、市政污水等固液分离行业系列配套。主要配套规格为2.5 m<sup>2</sup>/板，6 m<sup>2</sup>/板两种规格系列。

Verti-press EF is new solid-liquid separation equipment, which can choose diaphragm pressure according to working situation. The maximum water pressure is 1.6Mpa. It has characteristics of high degree of automation, continuous filtration, and low moisture of filter cake. Yantai Dataliner Machinery Equipment Co., Ltd, a subsidiary of Yantai Future Automatic Equipments Co., Ltd, has built up productivity for principal machine. The main standard of principal machine is 12.5~50 m<sup>2</sup> (2.5 m<sup>2</sup> filter plate series) and 60~144 m<sup>2</sup> (6 m<sup>2</sup> filter plate series)

Hydraulic system mainly controls switching and pressing of cylinder drive filter plate, unloading of motor drive filter cloth, stretching of filter cloth and error correcting, etc. It adopts electromagnetic ratio control, and has high accuracy in synchronism and high arc stability. It has been equipped with solid-liquid industry, such as mine, non-ferrous smelting, sodium, medicine, and municipal wastewater. There are two main standards: 2.5 m<sup>2</sup>/ sheet, 6 m<sup>2</sup>/ sheet.

全自动立式压滤机液压原理图/Drawing for Verti-press EF:



##### 全自动立式压滤机液压系统及使用现场

Verti-press EF in warehouse



##### 2、全自动快速卧式压滤机专用液压系统/Special hydraulic system for horiz-press EF

全自动快速卧式压滤机为新型固液分离设备，过滤性能、自动化程度与立式压滤机相当，但卧式结构安装优越性远超立式压滤机，目前单台过滤面积最大已做到600m<sup>2</sup>，产量与过滤面积5000m<sup>2</sup>的普通卧式压滤机相当。具有自动化程度高，连续过滤，滤饼水分很低等特点，已成功应用于超大产量的精煤、尾煤、铁矿尾矿、金矿尾矿的物料过滤中，在一些大型煤矿中已开始取代120 m<sup>2</sup>盘式加压过滤机作为超大产量过滤专用设备的霸主地位。

液压系统主要控制油缸驱动滤板开合、压榨，马达驱动滤板合拢、锁定及三次快速拉开卸料。采用活塞缸拖动柱塞缸的“一拖四”式回路，空行程时，活塞缸快速带动柱塞缸，柱塞缸从动吸油，到位后顺序阀控制升压压紧，节能效果显著。主要配套规格为1500、2000、2500滤板系列。

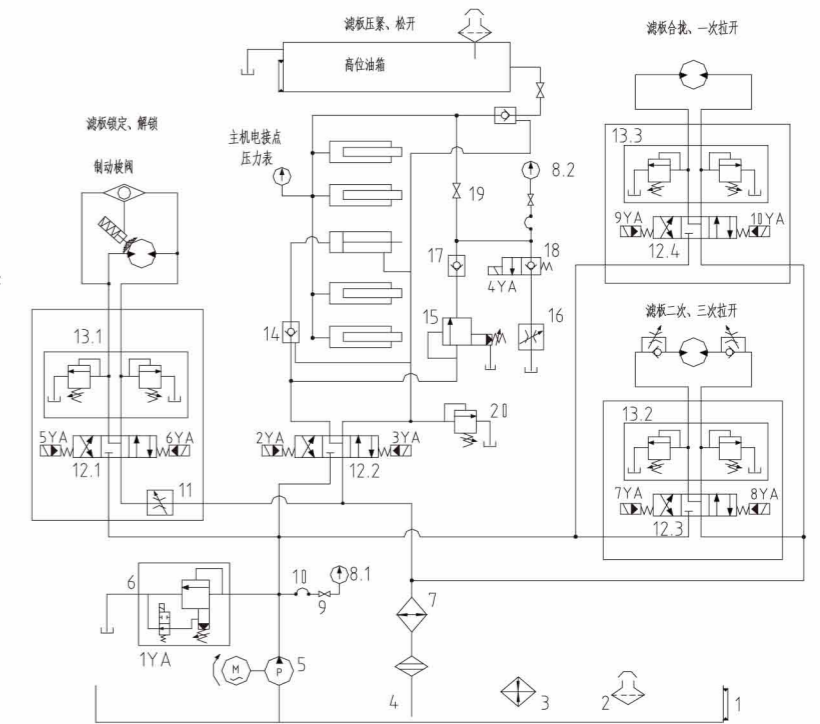
Horiz-press EF is new solid-liquid separation equipment, which is equivalent to verti-press EF on filtering quality and automatic degree. But horiz-press EF surpasses verti-press EF on installation superiority. The maximum filtering area for one horiz-press EF has reached 600m<sup>2</sup>, and the production capacity is same to ordinary horiz-press EF with filtering area of 5000 m<sup>2</sup>. It has characteristics of high degree of automation, continuous filtration, and low moisture of filter cake. It has been used to material filtering of large output on coal, tailing, ferrous tailing and gold mining tailing. It has substituted 120 m<sup>2</sup> pressure disk filters in some big-size coal mine as domination of large output filter specific equipment.

Hydraulic system mainly controls switching and pressing of cylinder-driven filter plate, and motor-driven filter plate switching, locking and discharging in three times' fast opening. It adopts "one tows four" style's circuit of piston tank towing plunger cylinder. When there is spare travel, piston tank tows plunger tank quickly, and plunger tank absorbs oil correspondingly. After reaching level, sequence valve strengthens pressure to press firmly. It has good energy-saving effect. The main filter plate standard: 1500、2000、2500

全自动快速卧式压滤机液压原理图/Drawing for horiz-press EF:

##### 全自动快速卧式压滤机液压系统及使用现场

Application of hydraulic system for horiz-press EF

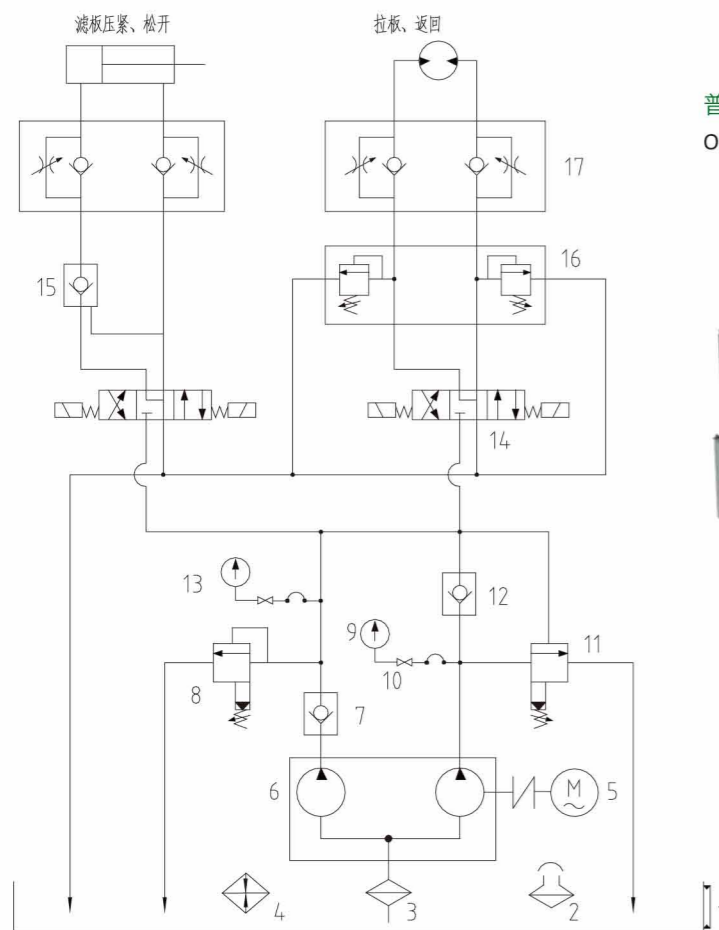


#### 3.普通卧式压滤机专用液压系统/Special hydraulic system for ordinary horiz-press filter machine

普通卧式压滤机为经济实用型固液分离设备，具有功耗低，操作维护简单、运行费用低，等特点。广泛应用于矿山，有色冶炼、纯碱、医药、市政污水等所有固液分离行业。液压系统主要控制油缸驱动滤板开合、压榨，马达驱动滤板卸料等动作，系统回路采用一个电机驱动的高低压双泵，采用外控顺序阀作为低压泵卸荷阀，安全节能。主要配套规格为720、1250、1500、2000滤板系列。根据主机工况分为液压压紧、液压卸料配套，以及液压压紧、手动卸料配套。

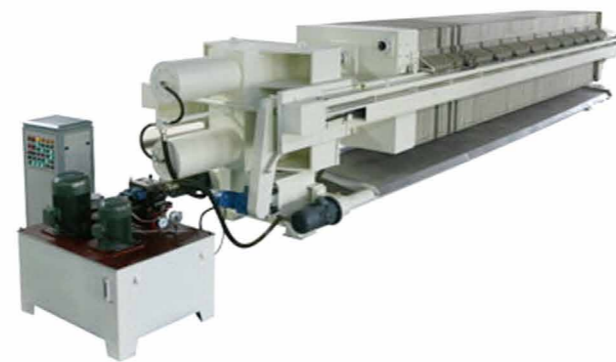
Ordinary horiz-press filter machine is economic style solid-liquid separation equipment, and it has characteristics of low power, easy maintenance, and low operation. It is widely applied in solid-liquid industry, such as mine, non-ferrous smelting, sodium, medicine, municipal water waste. System circuit, which is safe and energy-saving, uses high low pressure double pump driven by one motor, and adopts sequence valve of outer control as unloading valve of low pressure pump. The main filter standard: 720、1250、1500、2000. It can be divided into: hydraulic pressing facilities, hydraulic unloading facilities, hydraulic pressing facilities, and manual unloading facilities

#### 普通卧式压滤机液压原理图/Drawing for ordinary horiz-press filter machine



普通卧式压滤机液压系统

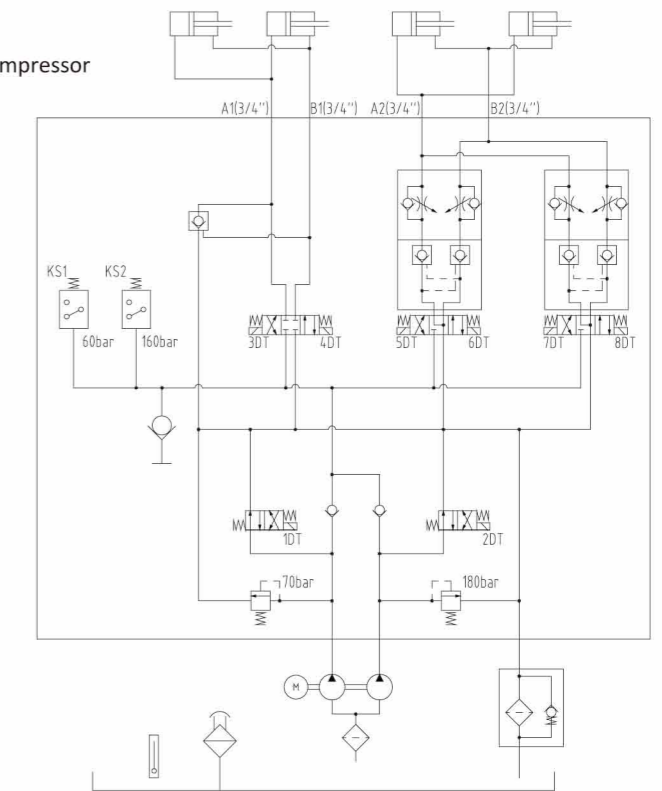
Ordinary horiz-press filter machine hydraulic system



#### 4.垃圾压缩机专用液压系统及城市垃圾中转压缩站液压系统/Special hydraulic system for garbage compressor and hydraulic system for municipal garbage transfer station

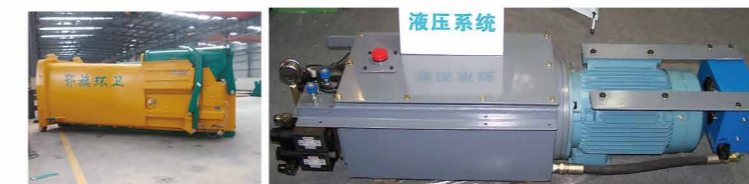
垃圾压缩机专用液压系统原理图

Hydraulic system drawing for garbage compressor



垃圾压缩机为全密封型，自行压缩、自行倾倒、压缩过程中的污水全部进入污水厢，运输过程中无二次污染，液压系统关键部件采用进口部件，具有结构紧凑，体积小，噪音低、寿命长，效率高的特点；已批量为垃圾压缩机生产单位配套。

Garbage compressor is sealed completely, self-compression and self-dumping. The polluted water in the process goes into waste water room. There is no pollution in transport. The key part of hydraulic system adopts imported parts, which has characteristics of tight structure, small volume, low noise, and efficiency. We have been in mass production for garbage compressor companies.



垃圾压缩机及其专用液压系统

Garbage compressor and special hydraulic system



城市垃圾中转压缩站液压系统及使用现场

Application of hydraulic system for municipal garbage transfer station

## 橡塑设备液压系统

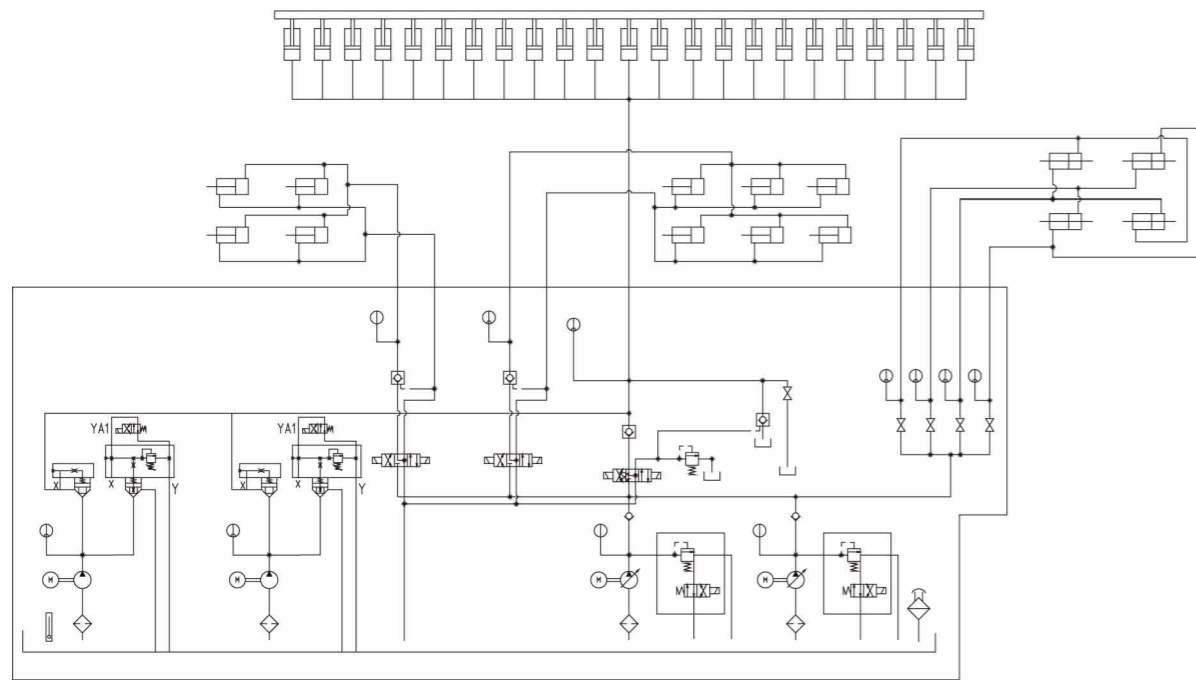
### Four Hydraulic systems for rubber and plastics equipment

#### 1. 平板硫化机液压系统/Hydraulic system for flat vulcanizing machine

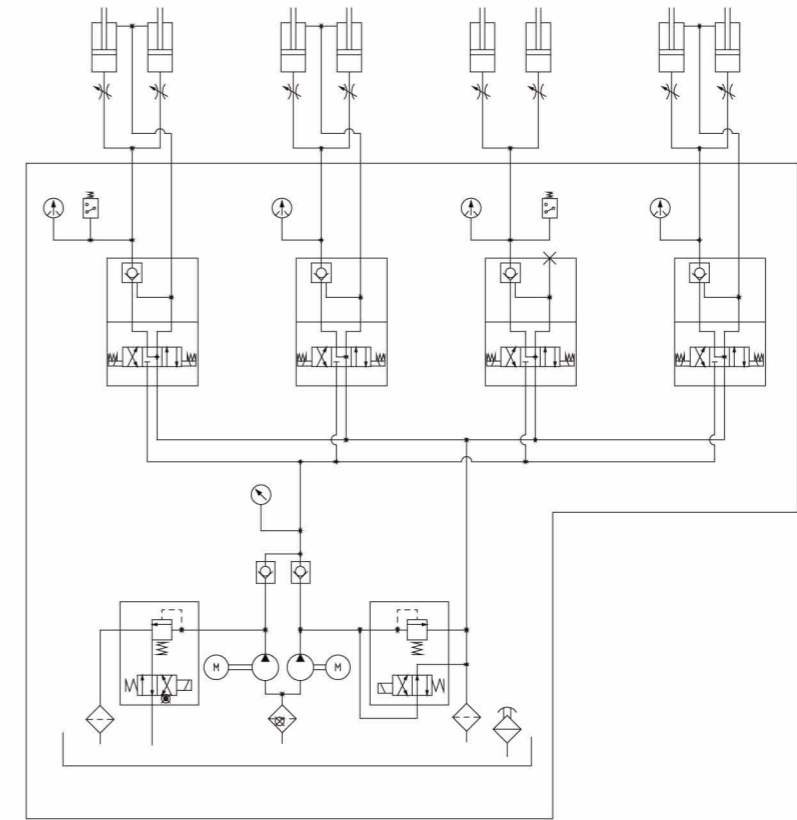
提供平板硫化机生产线各液压系统，包括：主机站、夹持涨力站、夹持拉伸站、成型车站、拉带机站、接头硫化机站、修补机站、裁断站等。可根据客户产品宽度要求进行设计制作。

Flat vulcanizing machine production line and hydraulic system include: host station, clamping tension station, clip tension station, molding station, strap machine station, joint vulcanization machine station, repairing station, cutting station and so on. It can be designed according to customer's requirement.

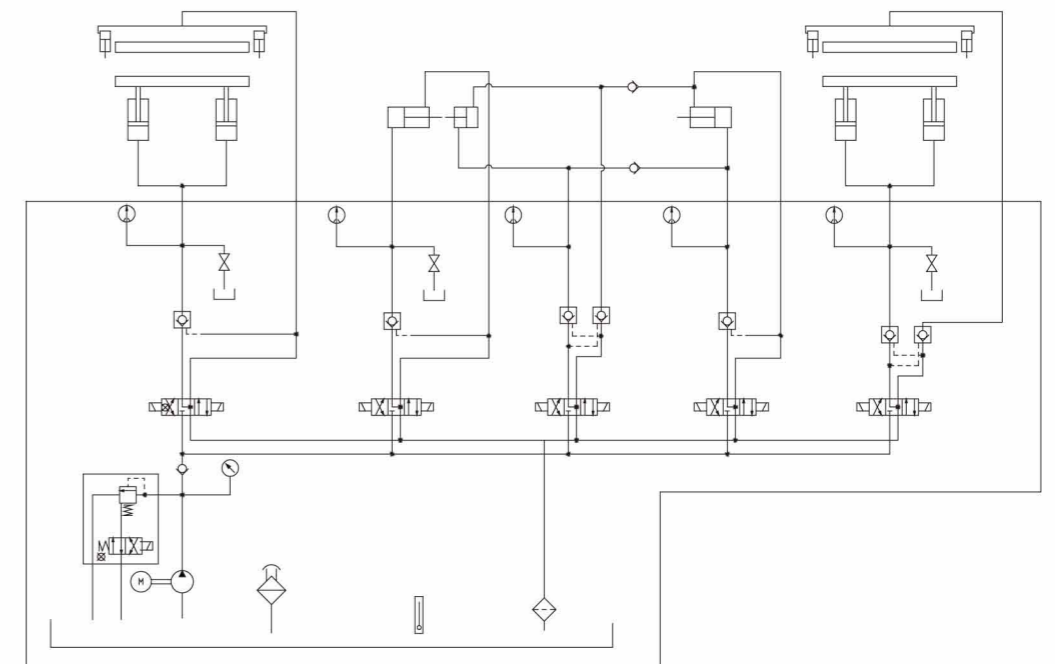
主机站液压原理图/Hydraulic drawing for main station



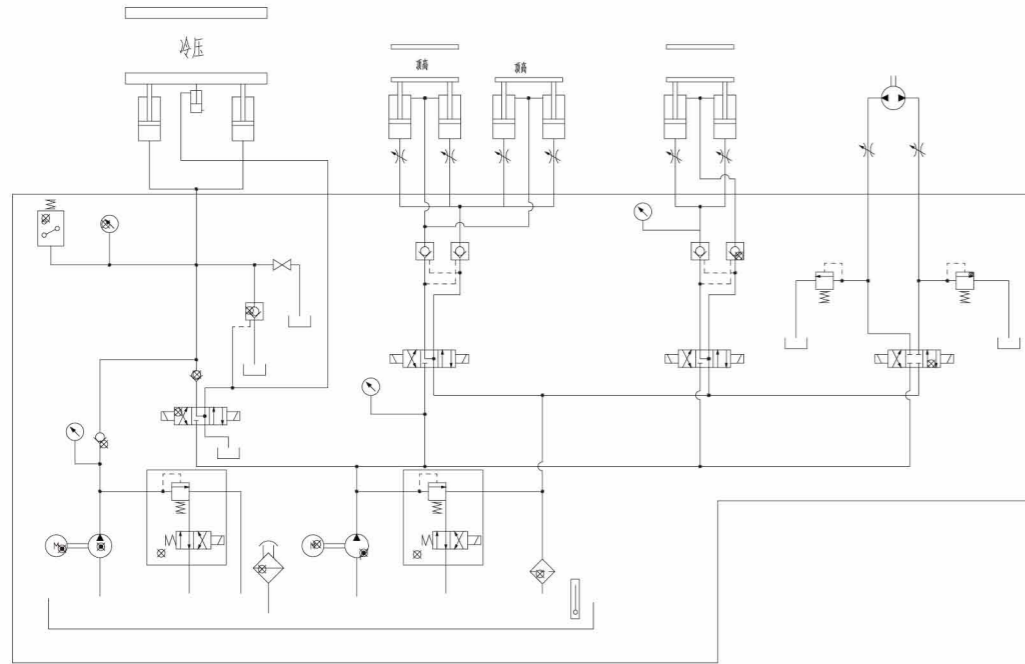
夹持涨力站液压原理图/Hydraulic drawing for clamping tension station



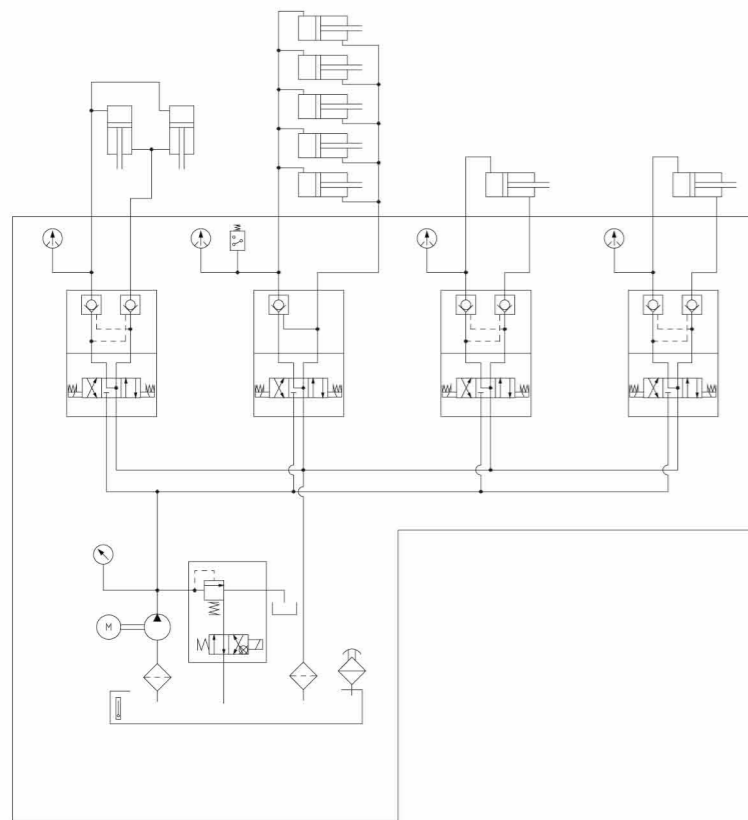
夹持拉伸站液压原理图/Hydraulic drawing for clip tension station



成型车站液压原理图/Hydraulic station for molding station



拉带机液压原理图/Hydraulic drawing for strap machine station



## 2.两辊开炼机调距装置液压系统/Hydraulic system for two roller mill distance adjusting device

主要用于调整开炼机前后两辊之间的辊距。替代电动调距和手动调距。其调距准确，使用安全可靠，已形成大量配套。

It is mainly used to modify mill distance between two rollers. It substitutes electronic mediation and manual mediation. It is accurate, and safe. Now it has formed batch production.

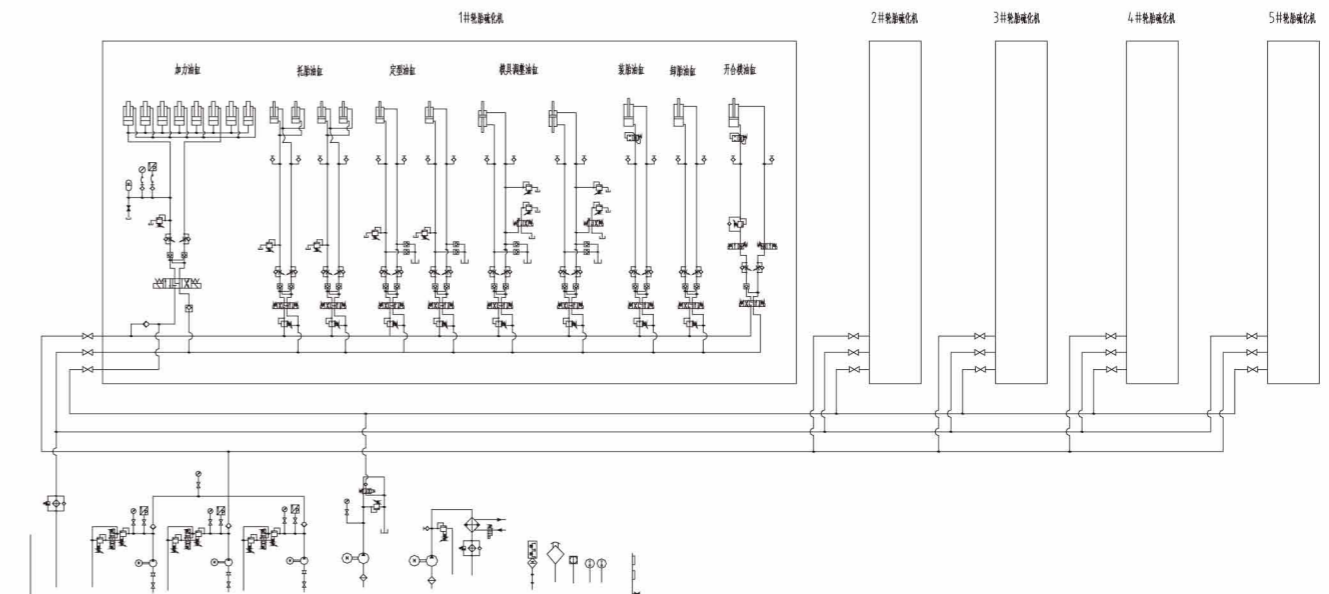
## 3、液压式轮胎定型硫化机液压系统/Hydraulic system for hydraulic tire vulcanizer

是轮胎定型硫化机的动力源，能够驱动硫化机的升降装置、活络模装置、加力装置、中心机构、囊筒升降装置的动作。其回路简单、合理，故障率低，噪音小，使用寿命长。

可以做到多台硫化机(目前最多可实现7台)联动共用一个液压站，液压系统简单，投资少，占地面积小，维护保养方便，非常有利于集约化生产。多台液压硫化机共用一个液压站，通过液压集中分配，简化了管路，提高了液压系统使用效率，使日常维护更加方便。

It is power source for tire vulcanizer. It can drive lift device of vulcanizer, active mold device, afterburner device, central structure, and capsule tube lift device. The circuit is simple, reasonable, low defective, low noise and long life.

It can guarantee that some vulcanizers (maximum 7 sets) can use only one hydraulic station. Hydraulic system is simple, and low cost. It has small area, and is easy to maintain. It is suitable for intensive production. Some vulcanizers can use one hydraulic station. It can be distributed by hydraulic system, simplify tube and improve efficiency of hydraulic system. It is very convenient for daily maintenance.



#### 4. 液压式轮胎翻新硫化机液压系统/Hydraulic system for hydraulic tire curing vulcanizing machine

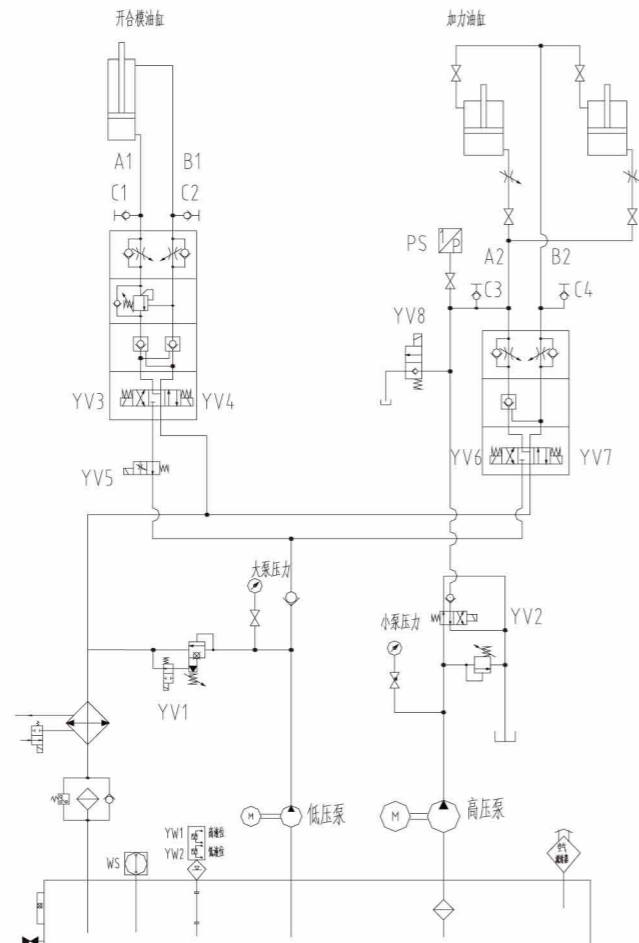
液压式轮胎硫化机液压系统能够实现以下动作：开合模，锁紧缸的升降与保压，中心机构升降，脱模机构升降，活络模的开合，装胎机构、卸胎机构的升降，装胎器的转入、转出。

The hydraulic system for hydraulic tire curing vulcanizing machine can achieve following steps: switching mold, lifting and packing lock cylinder, lifting and falling of demoulding mechanism, opening and closing of active mode, lifting and falling of loading mechanism and unloading mechanism, and turning in and out of tire mounting device

设备回路有以下优点/Equipment circuit has following advantages:

- 1) 模具锁紧缸锁紧腔油路上设置了压力变送器和蓄能器，能够保持恒定的合模力。
  - 2) 装胎机构和中心机构上环的高度可随意准确控制。
  - 3) 活络模可随上模进行闭合动作，并有一定的背压。
- 1) The locking cavity circuit of mold locking cylinder sets pressure transmitter and accumulator, which can keep stable clamping force.
  - 2) The height of tire mounting mechanism and central structure can be accurately controlld.
  - 3) Active mold can do closing movement with upper die. And it has back pressure.

液压式轮胎翻新硫化机液压原理图

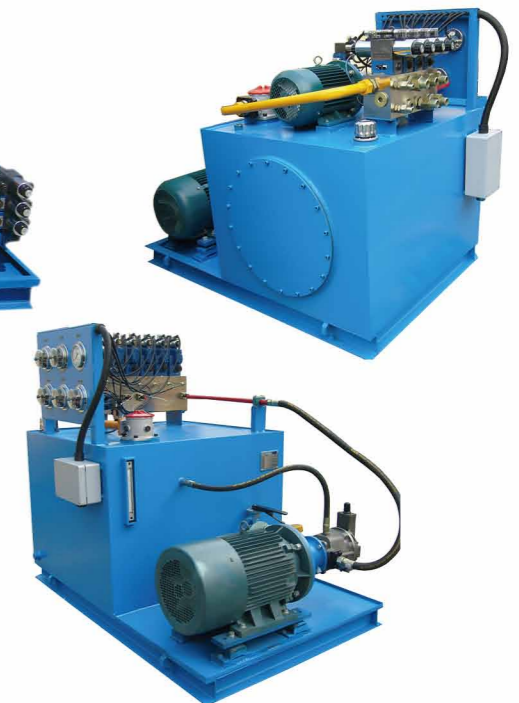


硫化机使用现场/Application of Vulcanizer



74MN平板硫化机液压系统  
74MN hydraulic system for flat vulcanizing machine

两辊开炼机调距装置液压系统  
Hydraulic system for two roller mill distance adjusting device



平板硫化机各部分液压站/hydraulic system for vulcanizing machine

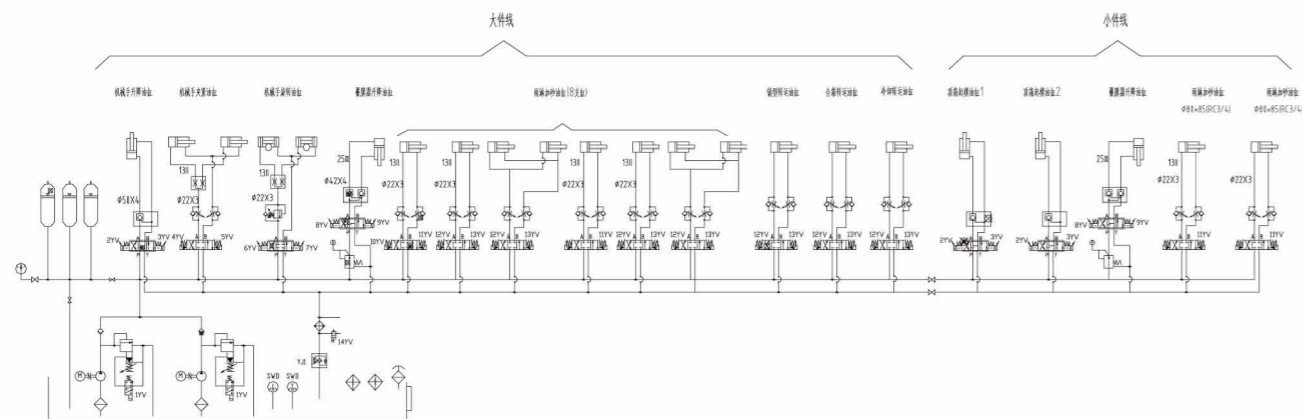


## 铸造机械液压系统 Hydraulic system for casting machinery

V法铸造造型是采用无粘结剂的干砂抽真空负压造型的一种特种铸造工艺方法，质量、效率、环保、型砂回收远远优越于传统砂型铸造。液压系统采用多组液压机械手完成合箱、翻箱、提箱、覆膜、起膜、转运、雨淋加砂等动作，采用电液比例控制，定位精确，动态稳定性极高。已形成系列规格配套。

V method casting mould is a special engineering method which uses binder-free dry sand to vacuumize and form subpressure. The quality, efficiency, environment protection and recycle of sand mixture of this method are much better than traditional sand mixture casting. This hydraulic system uses hydraulic manipulator to assembly mould, turn mould, hold mould, tectoria membrane and add wet sand, etc. It uses electro-hydraulic valve to control, which can fix more precisely and work more stably. This product has series specification.

V法造型铸造生产线液压原理图/hydraulic system working principle for V method casting mould.



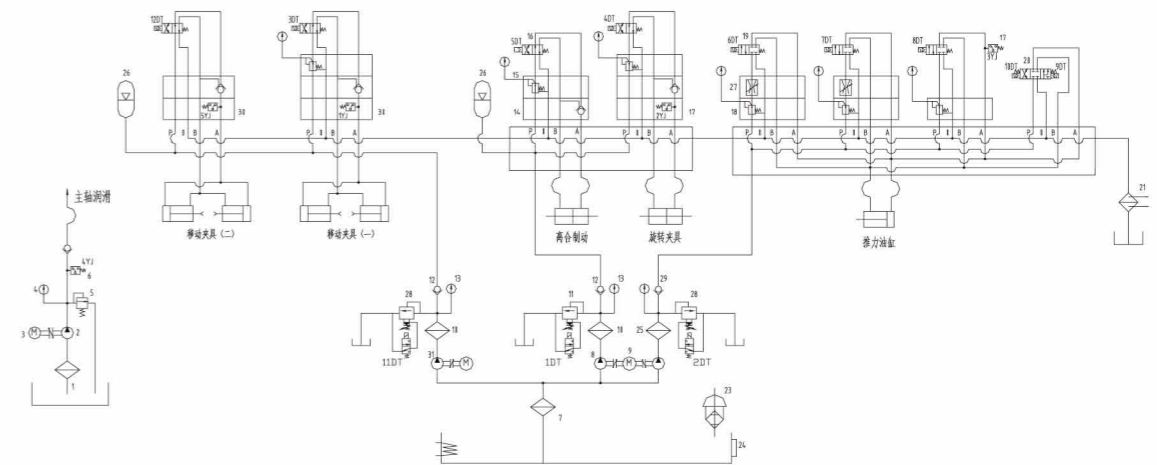
## 机床液压系统 Hydraulic system for lathe

### 1. 摩擦焊机液压系统/Hydraulic system for friction welding machine

摩擦焊机是利用工件端面相互摩擦产生的热量使之达到塑性状态后顶锻完成焊接的新型设备。系统主要控制夹具移动、离合制动、夹具旋转、顶锻油缸、主轴润滑等动作。目前我公司已形成应用最广的2.5T、5T、10T、15T、25T、32T、50T、80T、125T、132T系列配套。

This machine is a new welding equipment which that generates heat through mechanical friction between a moving workpiece and a stationary component. The hydraulic system mainly controls clamp movement, brake, clamp turning, upsetting cylinder, principle axis lubrication, etc. Now we have designed hydraulic system for friction welding machine of 2.5T、5T、10T、15T、25T、32T、50T、80T、125T、132T.

摩擦焊机液压原理图/hydraulic system working principle for friction welding machine



摩擦焊机液压系统在用户调试现场/adjusting site of the hydraulic system



## 2. 蓄电池正板栅压铸机液压系统/Hydraulic system for storage battery positive grid casting machine

蓄电池正板栅压铸机用于管式蓄电池的正板栅压铸生产，压铸板栅在板栅铅筋强度、结晶密实度等方面比浇铸板栅具有很大优势。为之配套的液压系统，分别实现移模油缸、开模油缸、锁模油缸的动作和压射油缸对铅液快速压铸。

此液压系统的关键是能够实现压射油缸在保持足够输出力下的快速顶出，使铅液在尽可能短的时间里完全充满模具内腔并持续保压几秒，压射油缸是否能快速有力的顶出，是影响板栅质量的关键因素。

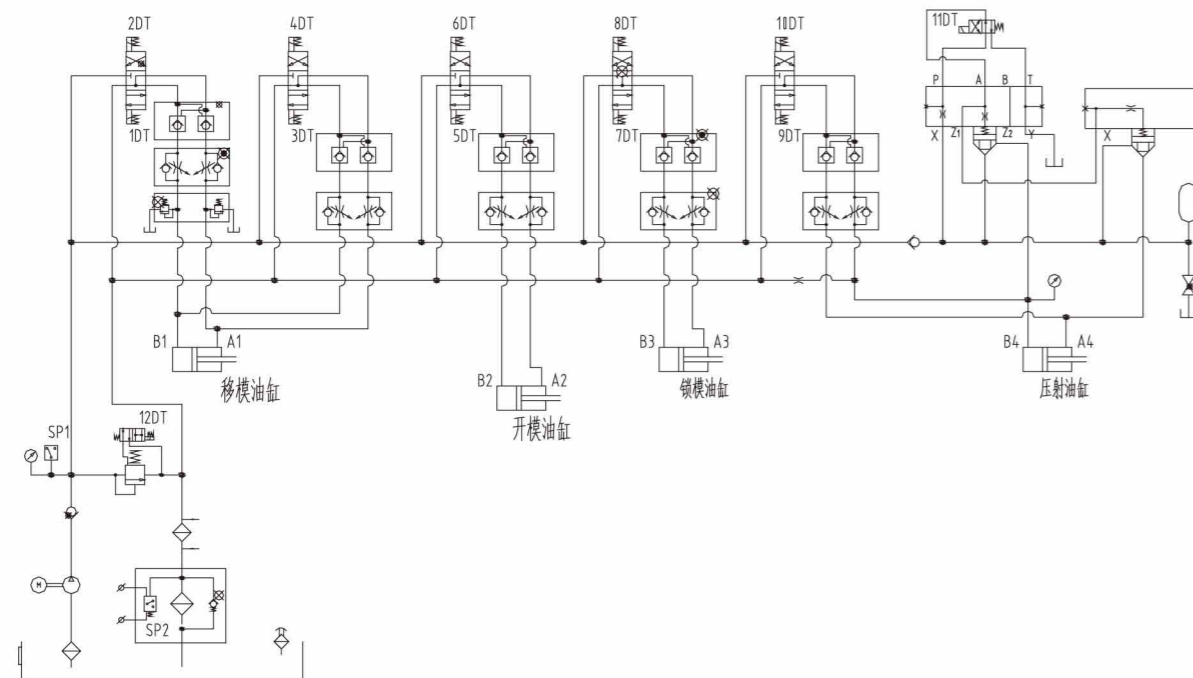
根据板栅外形尺寸的不同，目前，已形成YZJ-700、YZJ-500、YZJ-300等若干个机型的液压系统。

This machine is used for the production of positive grid press-casting. Press casting has many advantages than casting in strength, compactedness, etc. The hydraulic system can achieve the movement of molded cylinder, mold-open cylinder, mold-lock cylinder and fast press casting for injection cylinder.

The key point of this hydraulic system is to push out the hydraulic cylinder fast under enough force. It affects the grid quality whether the injection cylinder can be pushed out quickly.

According to the different sizes of the grid, we have designed several hydraulic system for it, like YZJ-700、YZJ-500、YZJ-300, etc.

### 蓄电池正板栅压铸机液压原理图/Hydraulic system working principle for grid press casting machine.

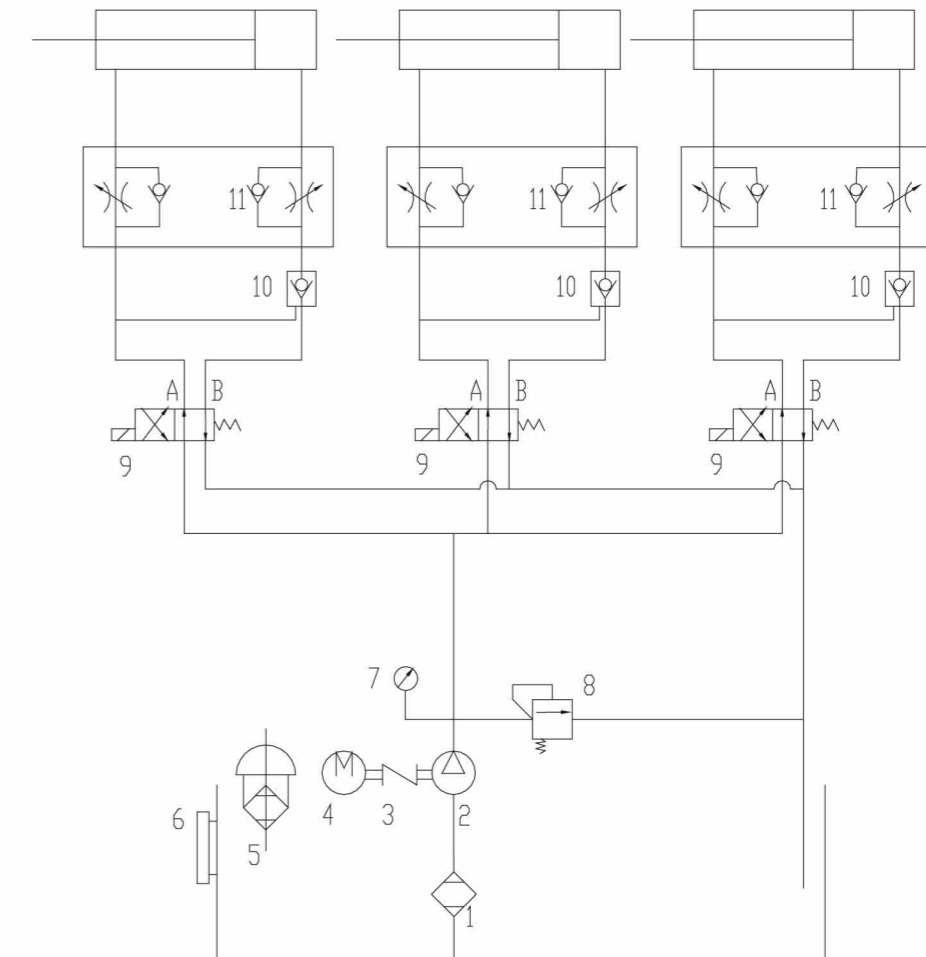


## 3. 无损检测设备液压系统/Hydraulic system for nondestructive examination equipment

主要控制检测设备升降台架的动作。

The hydraulic system mainly controls the action of examination lifting frame.

### 无损检测设备液压原理图/hydraulic system working principle for nondestructive examination equipment



## 船舶工程及海洋石油工程液压系统 Hydraulic system for shipping & offshore oil project

### 1. 船舶调距桨液压控制系统/Hydraulic system for setting up paddle on the ship.

广泛用于海洋平台工作船、挖泥船、拖轮、拖网渔船等的调距桨控制，针对调距时需要泵的排量较大，而稳距时只需补充系统泄露的工况采用变量泵，发热量小而且节能；系统采用一用一备，出现故障时不影响桨距调整。

This hydraulic system is widely used for the control of setting-up paddle of factory vessel, dredge boat, dory trailer, etc. when we adjust the paddle, the pump should be of large capacity. While we make up the system leakage, the pump should be of adjustable capacity. This equipment has two systems. So if there is a problem, it will not affect the paddle setting up.

船舶液压控制系统

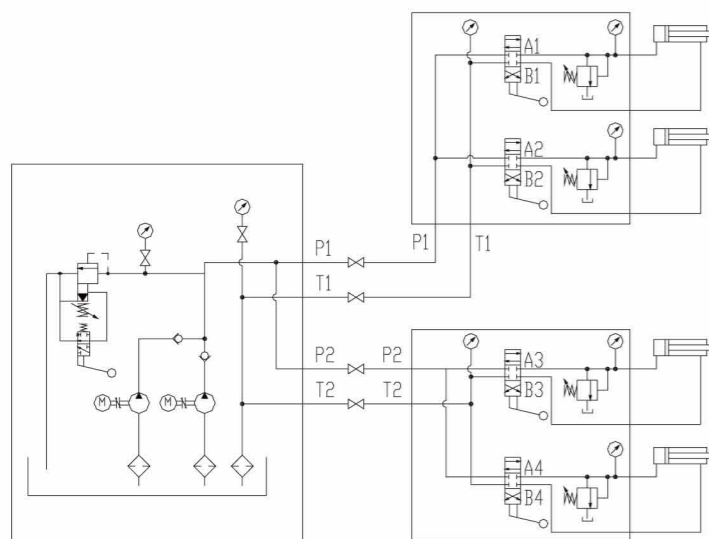


### 2. 海上石油钻井平台燃烧臂液压系统/Hydraulic system for offshore oil drilling burning arm

系统用于控制钻井平台燃烧臂的伸出和缩回，对开采出来的石油进行燃烧检测或防污染强制燃烧。属国内独家设计制作，防爆设计，安全可靠，获得美国船级社（ABS）质量认证。

This hydraulic system is used to control the extension & retraction of the burning arm and burn the oil to check the pollution. We are the sole manufacturer for this system which is anti-explosive and safe. This product has got the ABS certificate.

海上石油钻井平台燃烧臂液压原理图/hydraulic system working principle for burning arm

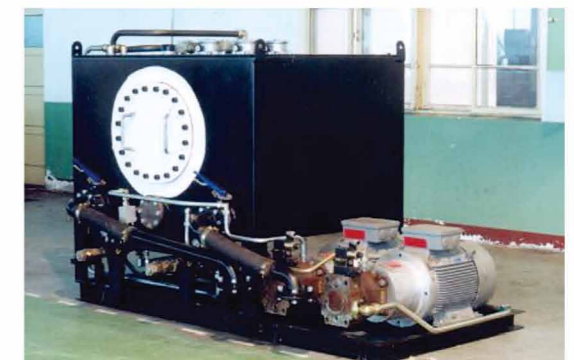
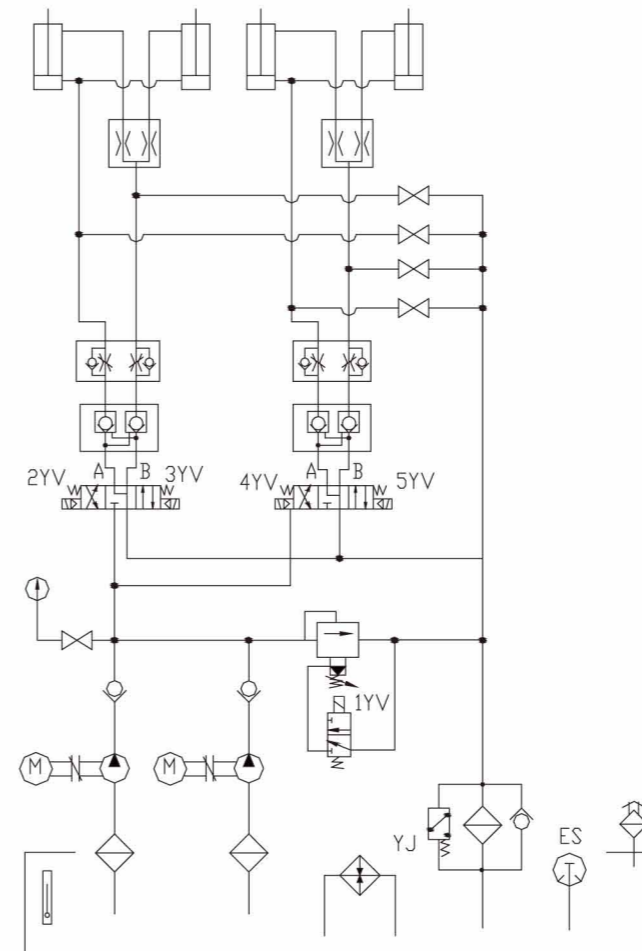


海上钻井平台燃烧臂液压系统使用现场/on-site usage

### 3. 浅水铺管船托管架快速解脱装置液压系统/Hydraulic system for the fast relief of pipe-laying ship

是在铺管船遇到危险或异常情况时与托管架脱钩，弃架保船的一种液压系统。属国内独家设计制作，获得中国船级社（CCS）质量认证。

This hydraulic system is used to discard the frame and hold the ship when the pipe-laying ship runs into dangerous situation. We are the sole manufacturer for this and get the CCS certificate



浅水铺管船托管架快解装置液压系统

Hydraulic system for the fast relief of pipe-laying ship

#### 液压动力单元及出口小型液压系统

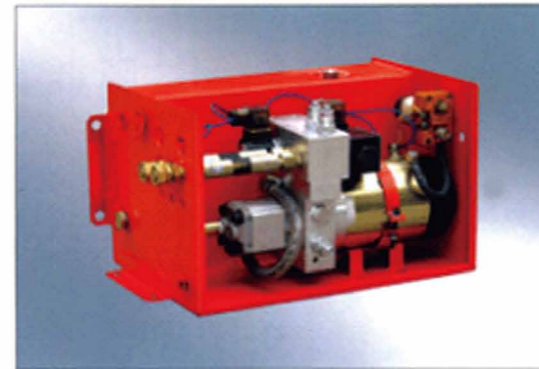
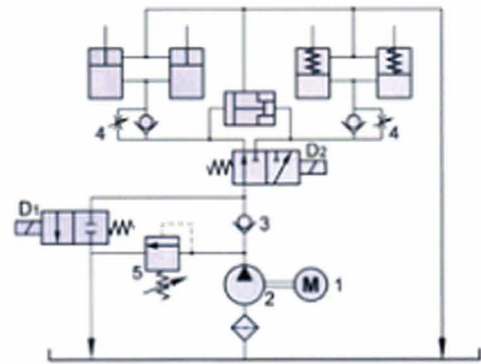
#### Hydraulic power unit & mini-hydraulic system for export

##### 1. 汽车尾板液压动力单元/Hydraulic power unit for tail-gate

WLWB系列液压动力单元是用于箱式货车尾板控制的动力装置，该动力单元利用汽车自带电源可控制尾板实现举升、关门、下降、开门等动作，速度可调，完成货物的装卸工作。具有安装维护方便，操纵简单、节省人力成本等特点。

WLWB type hydraulic power unit is used to control the tail gate of van. With this power unit, it can achieve the action of lifting, closing, dropping, opening, etc. It's convenient to assembly, simple to operate and save the labor cost.

##### ■系统原理图 Hydranic Circuit Diagram



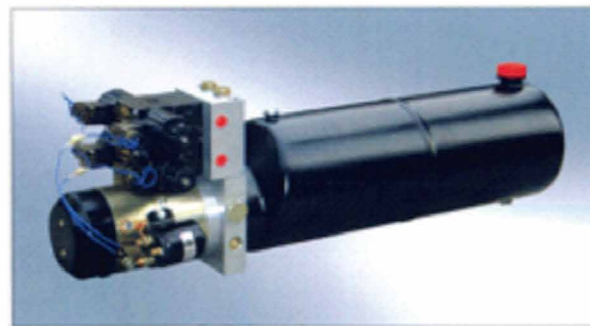
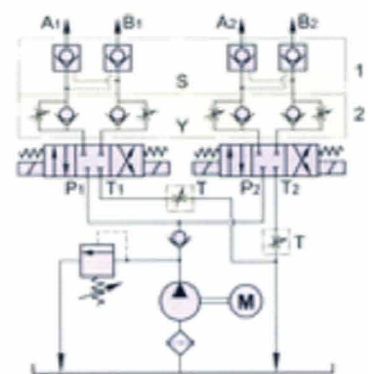
汽车尾板液压动力单元

##### 2. 飞翼车液压动力单元/Hydraulic power unit for winger car.

WLFY型液压动力单元为用于控制散装箱式货车的飞翼箱启闭的动力装置。分单开式和双开式等类型，双开式左右飞翼可分别控制，互不干涉，采用汽车自带电源，具有平衡性好，操纵简单等特点。

WLFY type hydraulic power unit is to control the on-off of winger car box. It has single-open & double-open types. The double-open type can control respectively and uses the power of the car itself which has good balance ability.

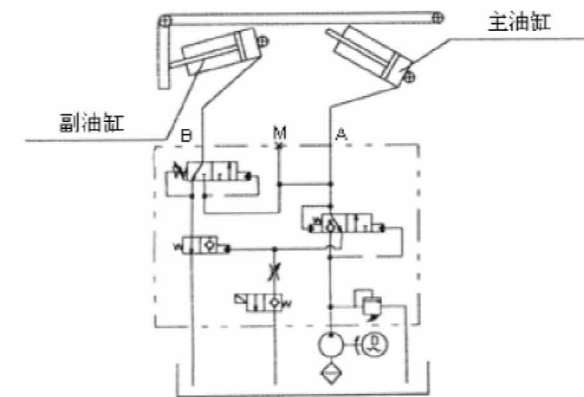
##### ■系统原理图 Hydranic Circuit Diagram



##### 3. 登车桥液压动力单元。

WLDC型液压动力单元是用于各种登车桥系统的动力装置，广泛应用于码头、车站、货栈等物流场所，方便叉车装卸货物。不用电磁阀，通过顺序阀和单向卸荷阀实现控制油缸的上升和下降，具有操纵简单，维护方便等特点，适合于水平安装。

WLDC type hydraulic power unit is used for various DCQ system, which is widely used on wharf, bus station, warehouse, etc. This hydraulic power unit doesn't need solenoid valve. It can control the up & down of lift through sequence valve & sing-way unloading valve. It's suitable for horizontal assembly.



3、登车桥液压动力单元

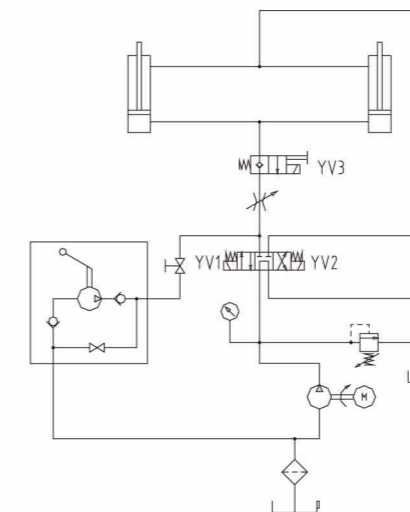
##### 4. 防爆门障设备液压系统。

主要大量出口中东地区，用于各种部门入口及路障关卡在核查时遇突发情况时启动门障设备，保护工作人员安全。

另外，我公司还可根据客户需求定做各种汽车举升机、剪式升降台，自卸车及医疗、物流、园林、环卫等行业使用的液压动力单元。

This product are mainly exported to middle-east area which can be used for the up & down of road-blocker.

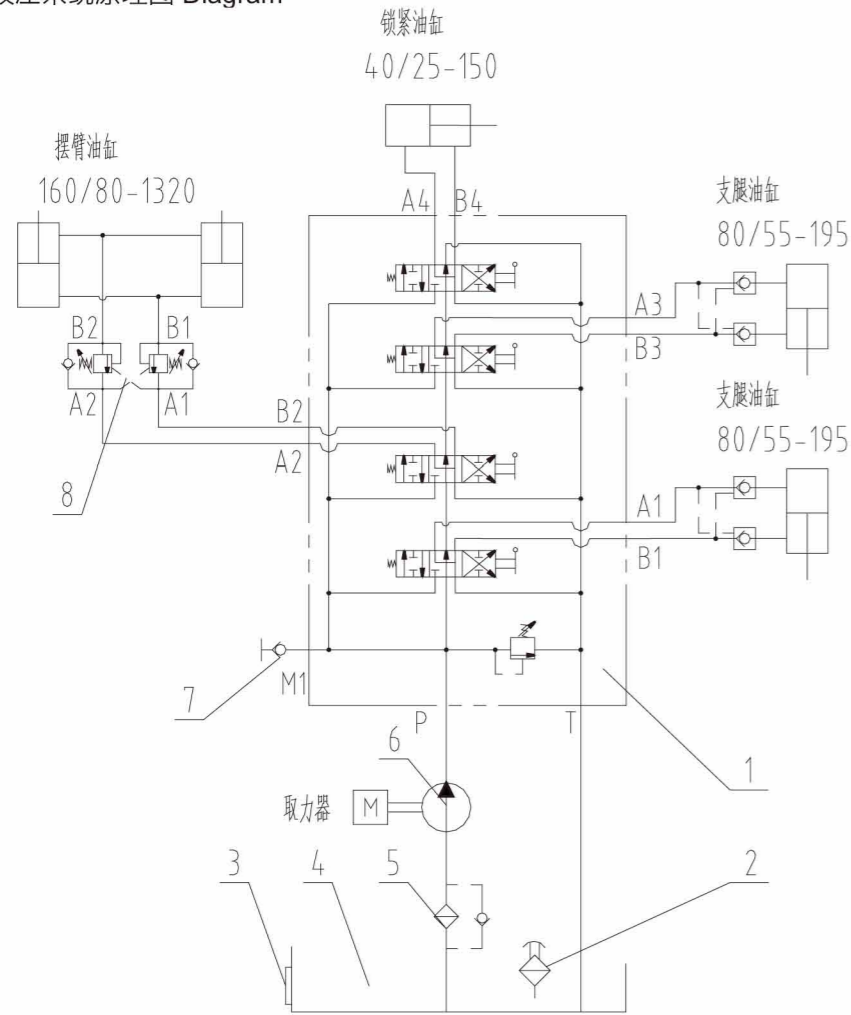
We can also manufacturer hydraulic power unit for lift industry, dump truck, medical industry, logistic industry, eco-environmental industry upon request.



防爆门障设备液压系统

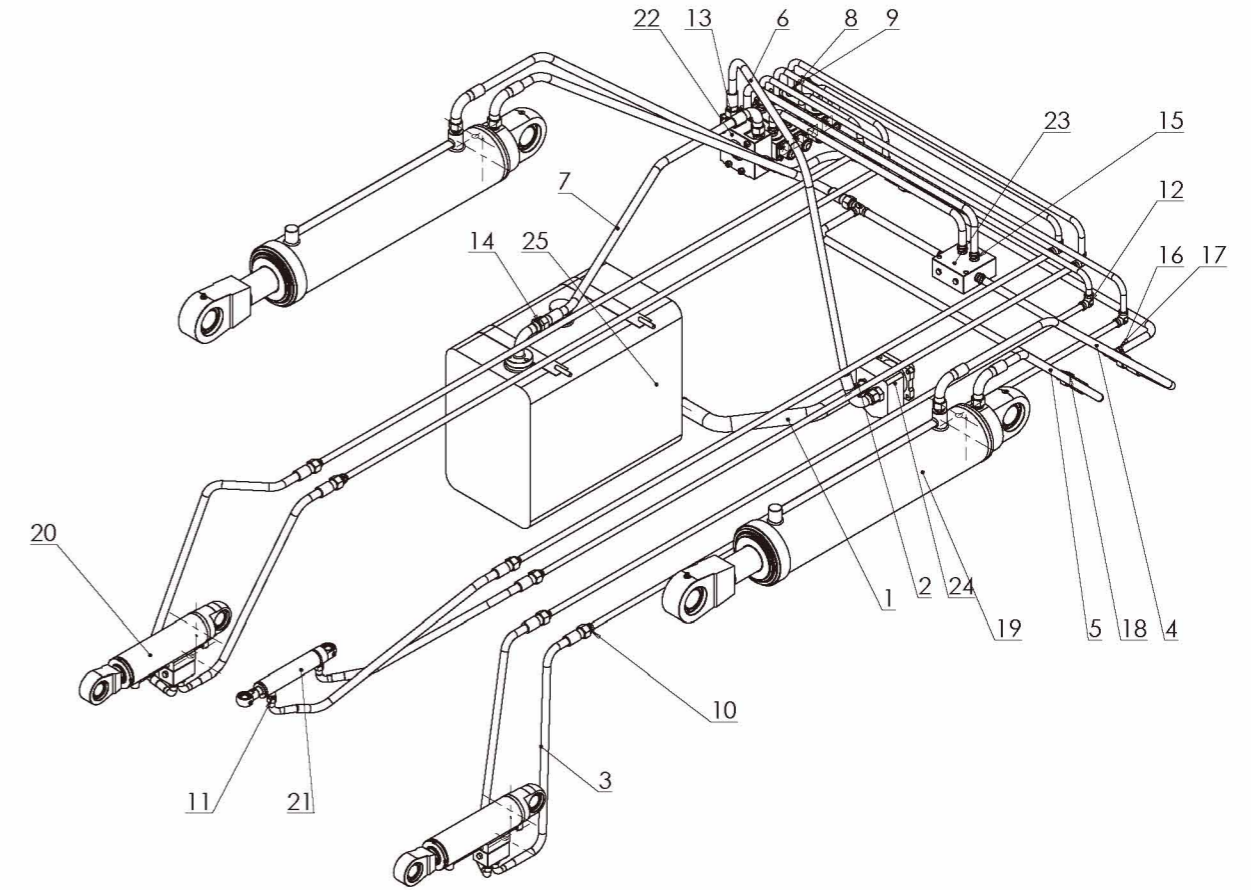
### 摆臂式垃圾车液压系统原理及组成 Hydraulic system theory and composition for arm-swing garage truck

液压系统原理图 Diagram



图中序号说明 Note:

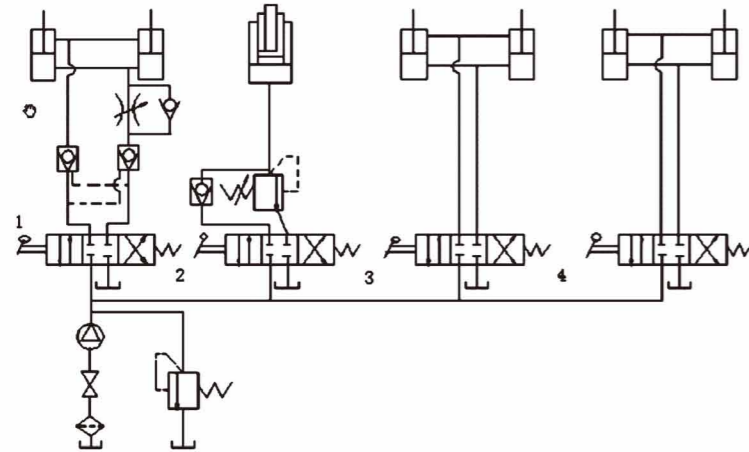
- |                          |              |                      |                                |
|--------------------------|--------------|----------------------|--------------------------------|
| 1、多路换向阀                  | 2、空气滤清器      | 3、液位液温计              | 4、油箱                           |
| 5、吸油过滤器                  | 6、齿轮泵        | 7、测压接头               | 8、双向平衡阀                        |
| 1、multi-way divert valve | 2、air filter | 3、Liquid thermometer | 4、oil box                      |
| 5、Suction filter         | 6、gear pump  | 7、Pressure joint     | 8、Bidirectional balanced valve |



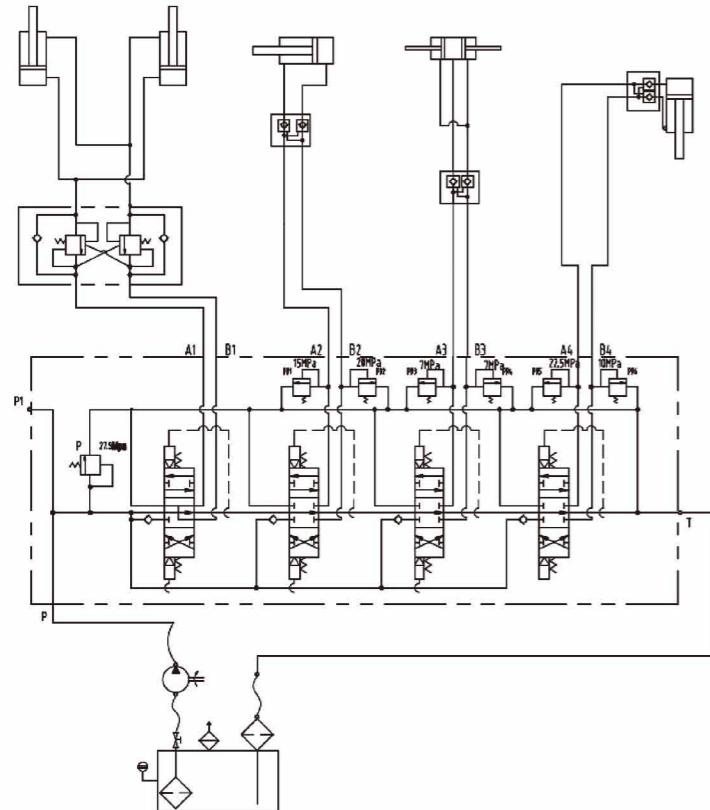
- |             |                            |            |                             |
|-------------|----------------------------|------------|-----------------------------|
| 1. 夹布输油胶管   | 1. Wrapped oil hose        | 14. 焊接接头   | 14. Welding Connector       |
| 2. 卡箍       | 2. Clamp                   | 15. 卡套式管接头 | 15. Pipe Connector          |
| 3. 扣压胶管     | 3. Burke Hose              | 16. 焊接接头   | 16. Welding Connector       |
| 4. 扣压胶管     | 4. Burke Hose              | 17. 三通接头   | 17. Three Way Fitting       |
| 5. 扣压胶管     | 5. Burke Hose              | 18. 焊接接头   | 18. Welding Connector       |
| 6. 扣压胶管     | 6. Burke Hose              | 19. 摆臂油缸   | 19. Arm-swing cylinder      |
| 7. 扣压胶管     | 7. Burke Hose              | 20. 支腿油缸   | 20. leg-supporting cylinder |
| 8. 卡套式管接头   | 8. Pipe Connector          | 21. 锁紧油缸   | 21. locked cylinder         |
| 9. 焊接接头     | 9. Welding Connecting Pipe | 22. 多路换向阀  | 22. Manifold vavle          |
| 10. 焊接接头    | 10. Welding Connector      | 23. 双向平衡阀  | 23. Two direction balance   |
| 11. 卡套式管接头  | 11. Pipe Connector         | 24. 齿轮泵    | 24. Gear Pump               |
| 12. 90°弯曲接头 | 12. Direct connecotor      | 25. 吸油过滤器  | 25. Oil Filter              |
| 13. 卡套式管接头  | 13. Pipe Connector         |            |                             |

### 压缩式垃圾车液压系统 Hydraulic system for compressed garbage trucks

液压系统原理图 Diagram



### 20吨垃圾臂钩液压系统 Hydraulic system for arm-swing garbage truck

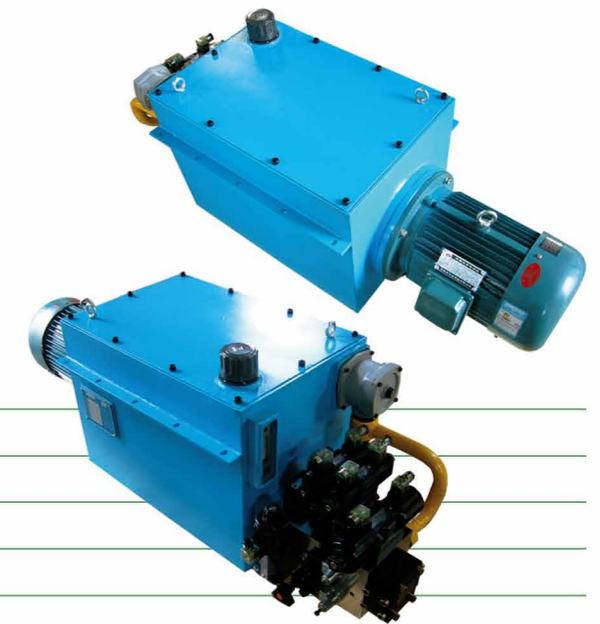


### 机箱一体式垃圾站液压系统 Integrative hydraulic system for garbage station

机箱一体式垃圾压缩站液压系统特性: Features:

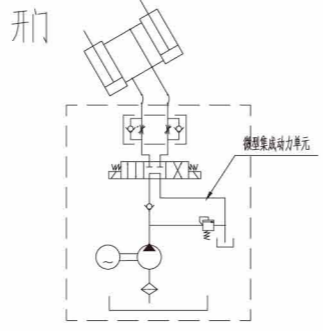
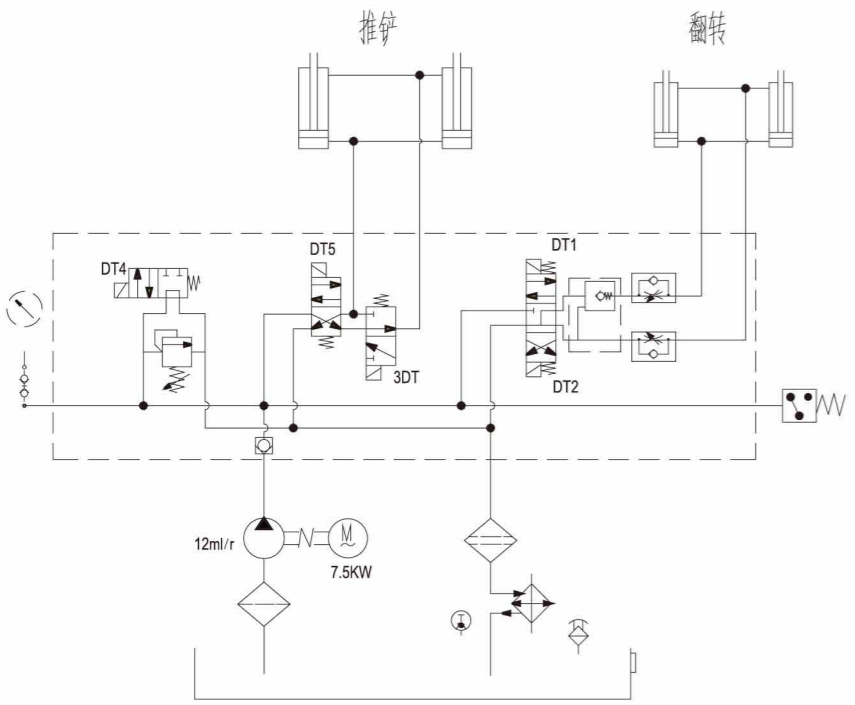
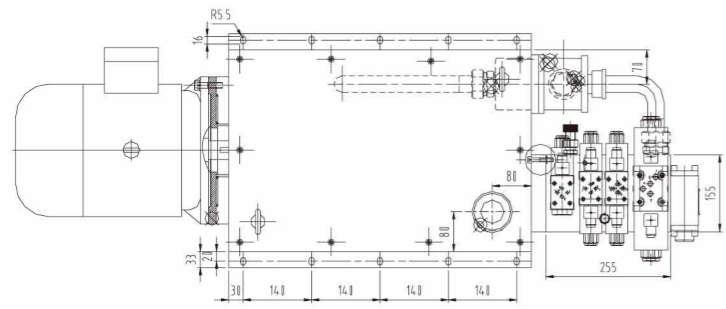
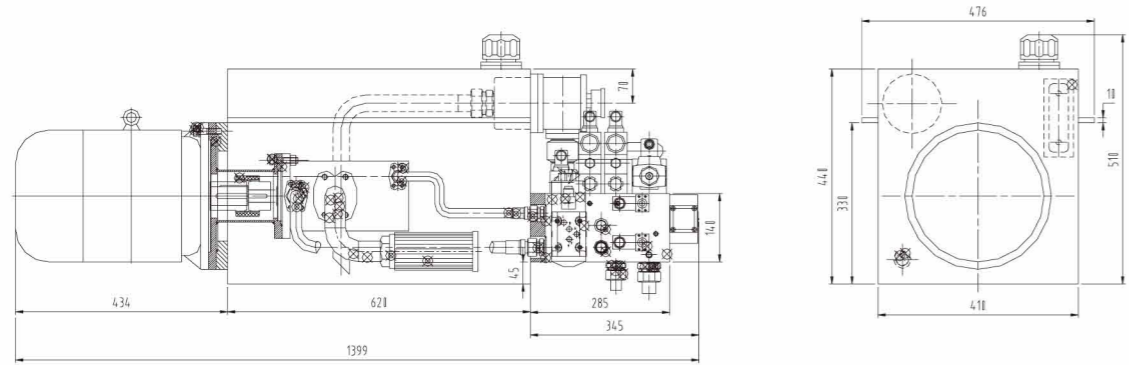
1. 油箱标准化, 小型化, 质量轻, 空间小。
2. 采用日本进口的双联叶片泵, 结构简单, 紧凑, 噪音低, 寿命长, 质量可靠, 经久耐用, 可广泛应用于中高压系统中。采用著名品牌的液压阀, 性能稳定, 质量好, 寿命长。优良的零部件能使压缩设备发挥出最大的工作效率。
3. 直接式电动机于液压泵传动机构: 电动机与液压泵采用平键传动, 平键连接具有结构简单, 装拆方便, 对中良好的优点;
4. 优化设计的液压系统, 动态响应快, 工作效率高, 作业循环时间短, 操作简单, 可靠实用。

1. Standard oil box with light weight and small space.
2. It adopts Japanese vane pump, which of simple structure, compact, low noise, long life-expectancy, high credibility. It can widely used in high-pressure system. It uses famous hydraulic valve, which is of steady performance, high quality and long life-expectancy. Excellent parts can make the compressed equipment have best performance.
3. Direct-type motor and hydraulic pump driving structure: The motor and hydraulic pump use flat-key transmission, which is of simple structure, easy disassembly
4. Optimized hydraulic system is of quick-response, high efficiency, short cycle, easy operation and high credibility.



### 技术参数 Technical Parameter

公称流量 Nominal flow	20L/min, 37.5L/min
额定压力 Rated pressure	18MPa
电机功率 Motor power	5.5KW
电机电压 Motor voltage	AC 380V, 50Hz
额定转速 Rated speed	1440r/min
防护等级 Protection class	IP44
电磁阀控制电压 Solenoid valve controlled voltage	DC 24V,
油箱容积 Oil box volume	85L
工作介质 Working medium	HM46 污染等级不低于NAS10级液压油 HM46 cleanliness class no less than NAS10



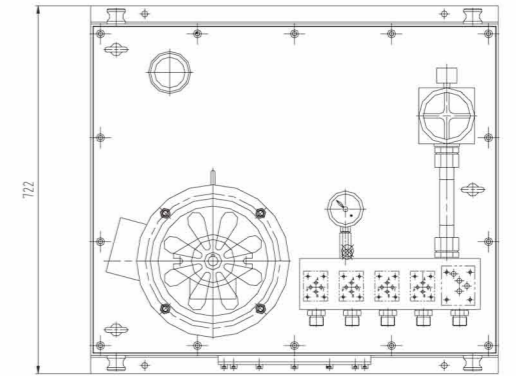
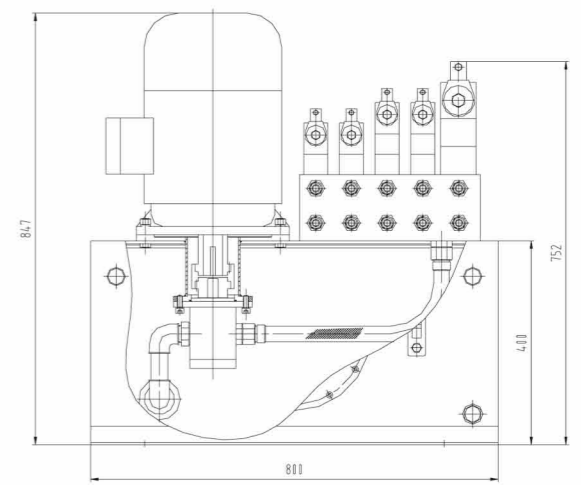
### 水平垃圾中转站液压系统 Hydraulic system of horizontal garbage transfer station

### 水平式垃圾压缩站液压系统 Horizontal type compressed system:

#### 特性 Features:

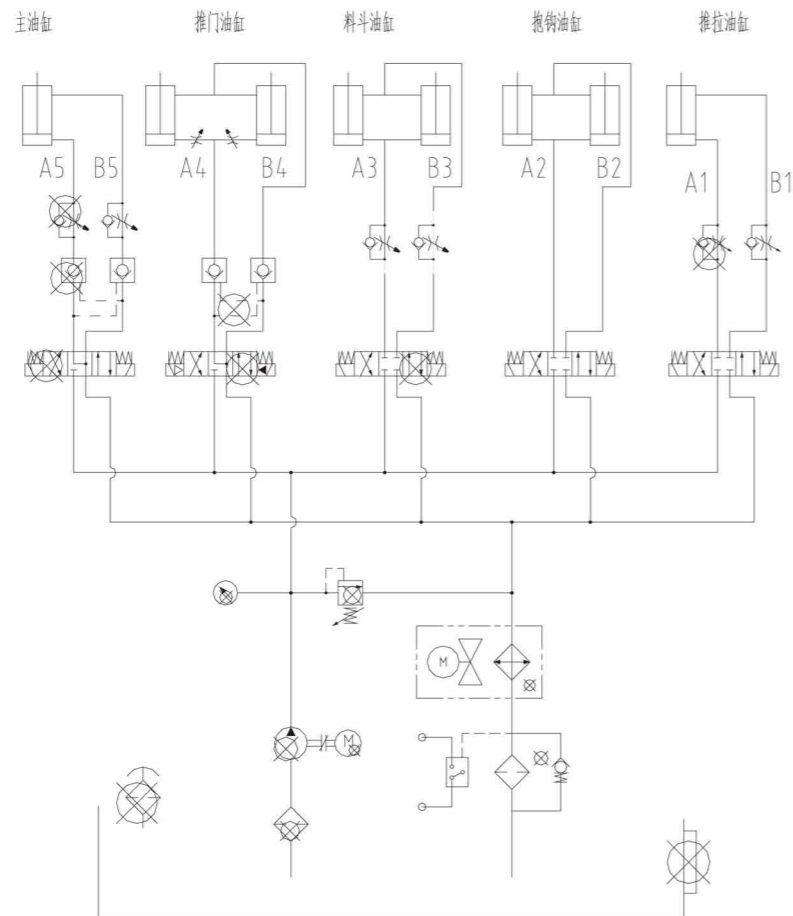
- 1.油箱标准化, 小型化, 质量轻, 空间小。
- 2.采用国内著名品牌齿轮泵, 齿轮油泵采用高强度铝合金材料, 内部结构使用了轴向间隙浮动补偿、径向平衡、DU自润滑等多项先进技术。它具有容积效率高、压力高、噪音低、寿命长等特点。采用著名品牌的液压阀, 质量可靠, 经久耐用。
- 3.直接式电动机于液压泵传动机构: 电动机与液压泵采用平键传动, 平键连接具有结构简单, 装拆方便, 对中良好的优点;
- 4.优化设计的液压系统, 动态响应快, 工作效率高, 作业循环时间短, 操作简单, 可靠实用。

1. Standard oil box with light weight and small space.
2. We use the famous brand gear pump, with the high intension alloy aluminum material. The inner structure adopts the technology of turning floating compensation, radial balance, DU self-lubrication, with the characteristics of efficiency, high-pressure, low noise, long life-expectancy. It also uses famous-brand hydraulic valve with high quality and long life-expectancy.
3. Direct-type motor and hydraulic pump driving structure. The motor and hydraulic pump use flat-key transmission, which is of simple structure, easy disassembly.
4. Optimized hydraulic system is of quick-response, high efficiency, short cycle, easy operation and high credibility.

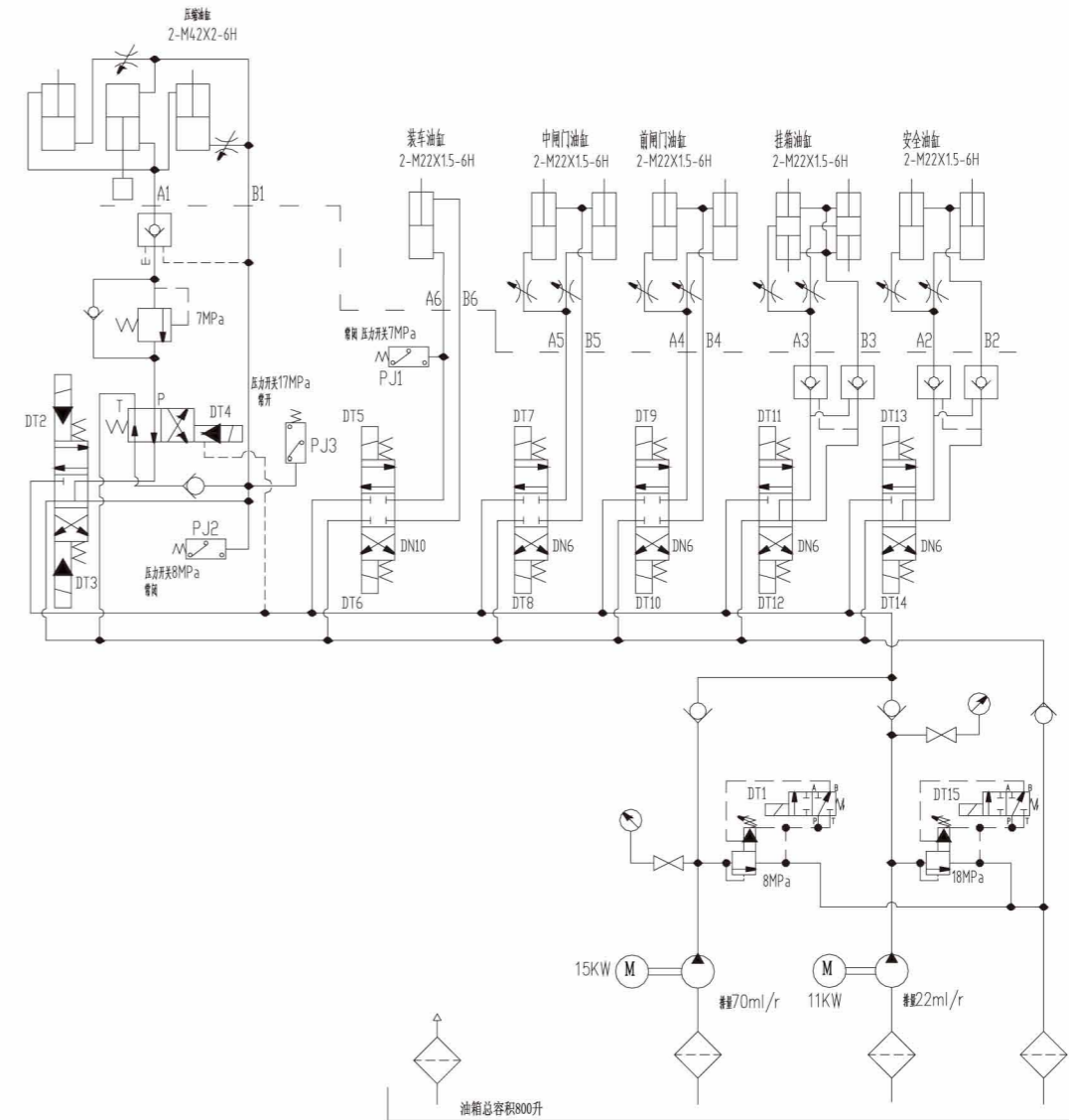


## 技术参数 Technical Parameter

公称流量 nominal flow	36L/min
额定压力 rated pressure	11MPa
电机功率 motor power	7.5KW
电机电压 motor voltage	AC 380V, 50Hz
额定转速 rated speed	1440r/min
防护等级 protection class	IP44
电磁阀控制电压 solenoid valve controlled voltage	AC 220V, 50Hz
油箱容积 oil box volume	190L
工作介质 working medium	HM46污染等级不低于NAS10级液压油 HM46 cleanliness class no less than NAS10.

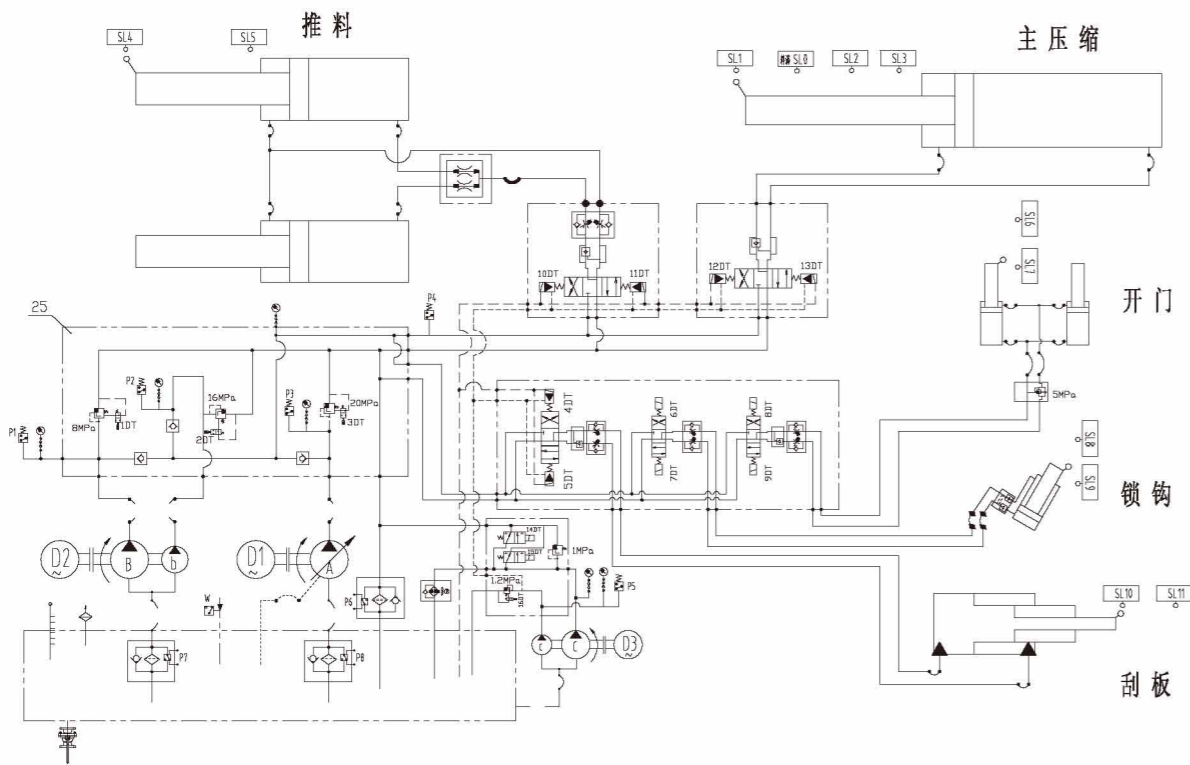


## 垂直式垃圾中转站液压系统 Hydraulic system for vertical garbage transfer station

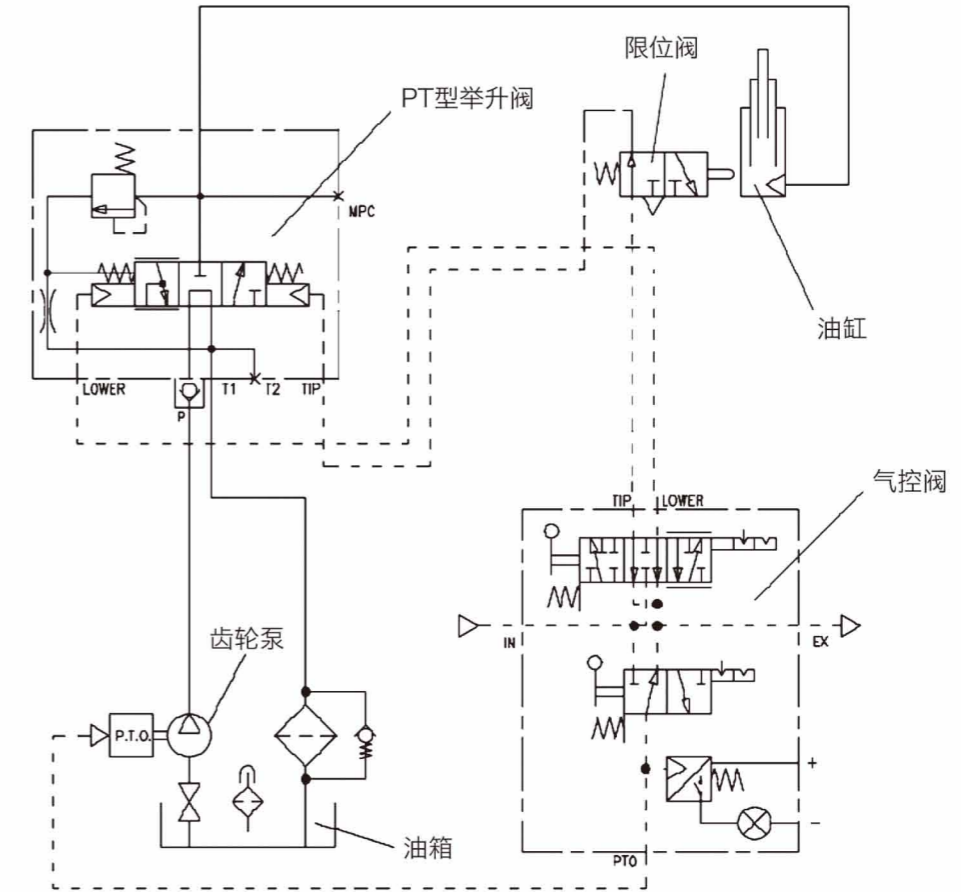




## 地埋式垃圾中转站液压系统 Hydraulic system for underground waste transfer station

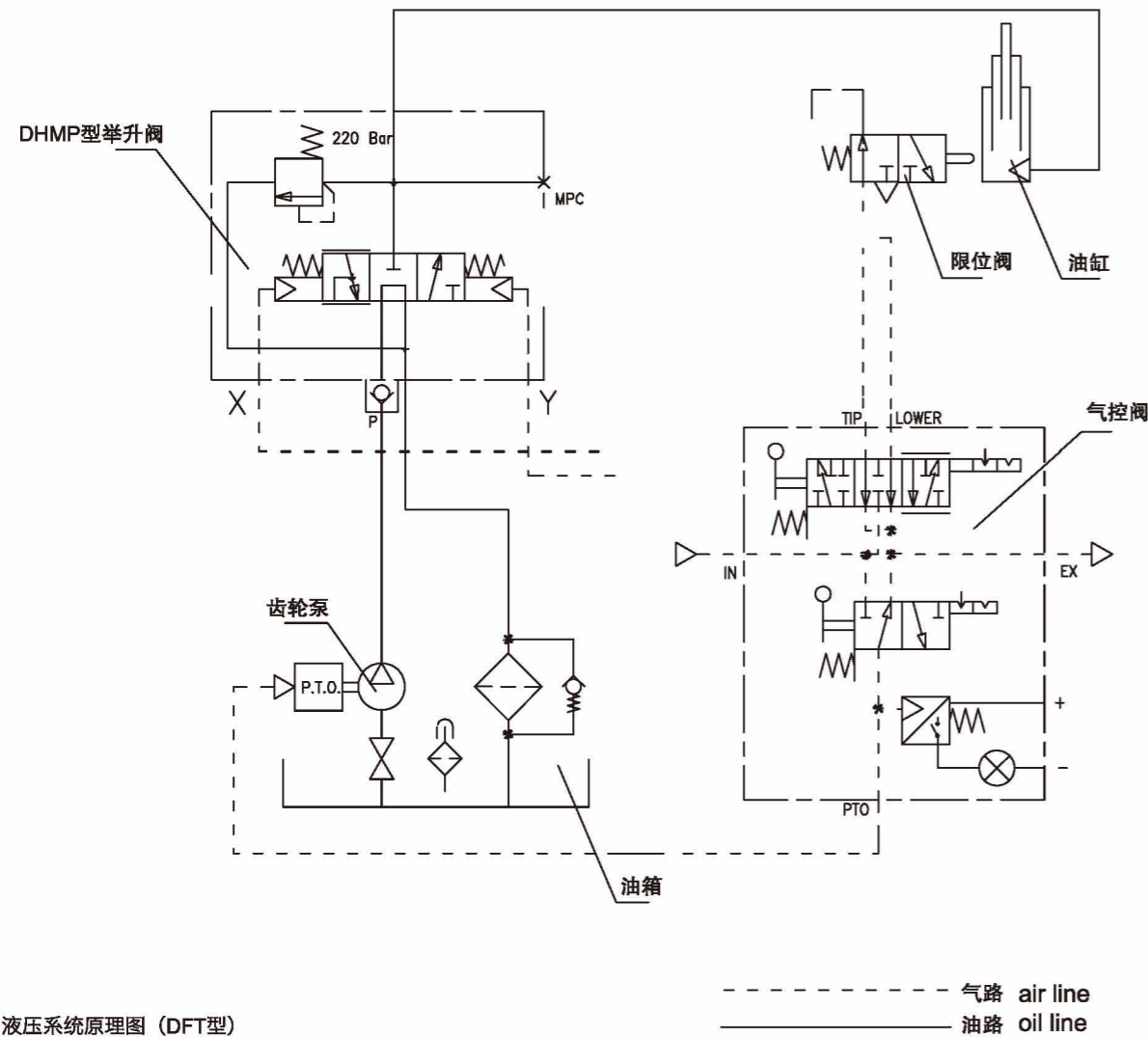


### 自卸车液压系统原理 Dumptruck hydraulic system 液压系统原理图 (配FT型举升阀) Hydraulic system(with FT liftvalve)

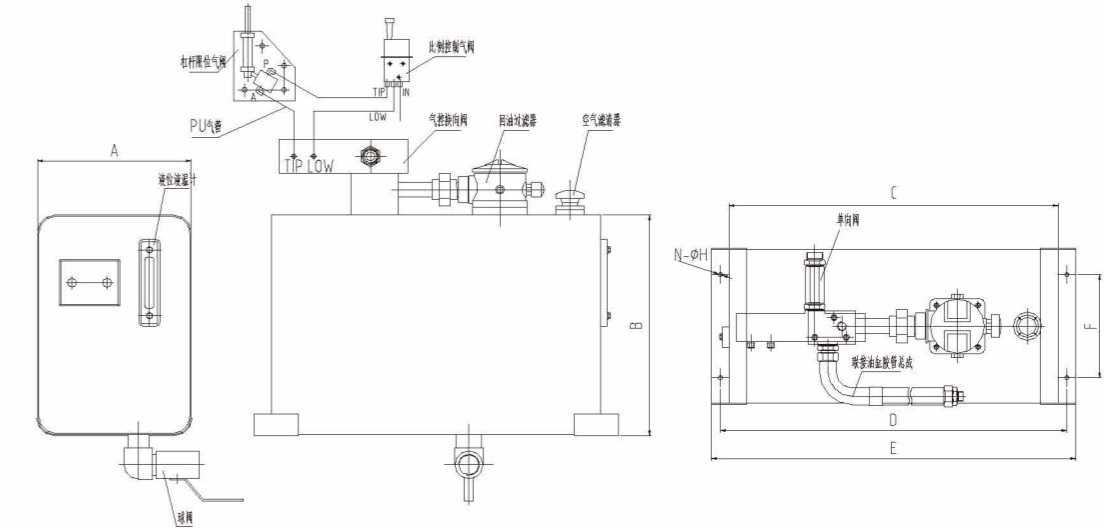


液压系统原理图 (FT型)  
Hydraulic system (FT Type)

液压系统原理图（配DFT型举升阀） Hydraulic system(with DFT liftvalve)



液压系统原理图 (DFT型)  
Hydraulic system (DFT Type)



技术参数 Technical parameter

油箱型号 Code	A	B	C	D	E	F	H	N
080L/065L-CM-MP-RF-LI	300	505	570	620	700	230	11	6
140L/110L-CM-MP-RF-LI	350	555	750	800	860	230	13	6
150L/120L-CM-MP-RF-LI	350	555	840	890	970	230	13	6
210L/180L-RM-MP-RF-LI	350	555	1200	1250	1350	230	13	6

油缸与油箱对应表 Hydraulic cylinder and oil sheet

油缸型号 Code	配套油箱型号 Oil tank code	油缸型号 Code	配套油箱型号 Oil tank code
FE130-3-04600	080L/065L-CM-MP-RF-LI	FC170-4-05180	140L/110L-CM-MP-RF-LI
FE130-3-03880		FC170-4-05460	
FE150-3-03700		FC190-5-05780	150L/120L-CM-MP-RF-LI
FE150-3-03880		FC190-5-05460	
FE150-3-04090		FC190-4-05180	
FC150-4-04620		FC190-4-05460	
FC150-3-04270	140L/110L-CM-MP-RF-LI	FC190-5-06180	
FC170-4-04280		FC190-4-06100	
FC170-4-04620		FC190-5-09030	210L/180L-RM-MP-RF-LI

技术参数 Technical parameter

油箱型号 Oil tank code	油箱工作容积 Capacitance (L)	外型尺寸 Out side dimension (L×W×H)
080L/065L-CM-MP-RF-LI	65	570×300×500
140L/110L-CM-MP-RF-LI	110	750×350×550
150L/120L-CM-MP-RF-LI	120	840×350×550
210L/180L-RM-MP-RF-LI	180	1200×251×696

## 公司总部及驻外机构通讯网络

### 公司总部:

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邮编: 264002  
电话: 0535-6520011 6520022 6520055  
传真: 0535-6530206  
电子信箱: scb@yantaifast.com  
网址: www.yantaifast.com  
技术咨询服务热线: 0535-6511033  
技术部电子信箱: qd-jsb@163.com  
质量投诉电话: 0535-6511677  
服务投诉电话: 0535-6510278  
售后服务免费热线: 4006182887

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邮编: 100036  
电话: 010-63965437

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电话: 024-25686090

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大连市甘井子区华北路甘段144号2-5-1  
电话: 0411-86655935

### 西安办事处:

西安市碑林区建东街海联北区3号楼东2单元6楼东户  
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Technical Consulting Service Line: 0535-6511033  
Email of Technical Department: qd-jsb@163.com  
Quality Complaint Line: 0535-6511677  
Service Complaint Line: 0535-6510278  
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### Xi'an Agency:

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Jiandong Street, Beilin District, Xi'an City  
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### Wuhan agency:

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Post code: 430015  
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### Chengdu Agency:

Room 2-4 Unit 4 Building 1, Xinhongnan Erxiang, number 18,  
Chengdu City  
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Tel: 028-84358844

### Qingdao Agency:

Room 3-601, Pacific Yixin Apartment, No. 117, Yanshougong  
Road, Licang District, Qingdao  
Post code: 266033  
Tel: 0532-87651480

\*以上所有产品均为批量配套油缸，已大规模生产，常规部件有模锻毛坯，可以快速为广大客户  
提供所需产品，非常感谢您的选用，我们将以高品质的产品回报您们。

\*All above products has started batch production. The standard parts have forging mold, so we  
can make delivery very fast. Thanks for choosing us and we will return high-quality products.