

桩工机械  
Piling Machinery



**中机锻压江苏股份有限公司**

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中机锻压江苏股份有限公司  
中国最专业的液压锤制造商



## 企业介绍 Enterprise introduction

中机锻压江苏股份有限公司是中央科技型企业北京机电研究所的控股子公司，位于中国最具活力的长三角北翼、中国东部沿海与苏北沿江高铁及高速公路交汇处——国家级海安经济技术开发区。

中机锻压的主营业务分三大类：锻造机械、桩工机械、钣金机械。

锻造机械主要包括程控全液压模锻锤、随动控制全液压自由锻锤、离合器式螺旋压力机、热模锻压力机、自动辊锻机、高刚度精密楔横轧机、锻造辅助设备及自动化生产线，包含锻造模具与工艺。

桩工机械是程控锻锤的衍生产品，主要包括陆地液压打桩锤、水下液压打桩锤、内击式液压锤、内击式液压夯击锤、内击式液压送桩锤、高速液压夯实机。将历经千锤百炼的程控全液压锤技术成功应用于打桩、夯实等基础施工机械是中机锻压的专长。

钣金机械主要包括高速伺服液压机、船用卷板机、上辊万能式卷板机、水平下调式卷板机、四辊卷板机、车辆专用卷板机、钢管卷制制管线、校平机、钣金自动化生产线。

中机锻压设有产业研究院——海安北京机电研究所锻压产业研发中心，注重以提高产品可靠性、工作精度及绿色智能化为重点的基础研究，拥有多项具有自主知识产权的成形技术、桩工技术、装备及系统集成技术，多次获得国家级或省部级奖励。

中机锻压占地 56000 平米，全钢结构厂房近 2 万平米，总装厂房最大单件起吊能力达百吨，金切车间拥有多台大型数控、数显金属切削加工设备，最大工件加工范围 4 × 12 米。公司已通过 ISO9001 质量管理体系认证和产品 CE 认证。

中机锻压将坚持“控制关键、掌握核心、立足高端、面向国际”的发展战略，秉承“崇匠务实、勤勉敬业、追求精益、敢为人先”的经营理念，充分利用一切可以利用的社会资源，全力打造具有锻压行业、桩机行业综合制造与系统集成能力及具有国际竞争力的国家级绿色智能锻造、钣金、桩工装备制造基地。

We, China Forging Machinery Co., Ltd. (CFM) are the holding subsidiary of Beijing Research Institute of Mechanical and Electrical Technology (BRIMET, a branch of China Academy of Machinery Science and Technology administrated directly by SASAC). CFM is located in National Haian Economic and Technical Development Zone, which is in the north of Yangtze Delta Area, at the cross point of China eastern and Jiangsu northern high speed rail along the sea and high expressway.

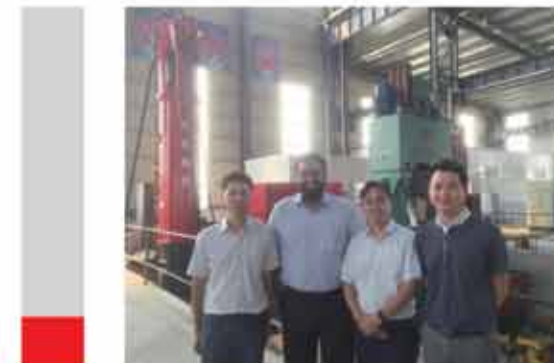
Our products are mainly divided into three categories. The first category is forging machinery, including CNC fully hydraulic die forging hammer, follow-up control fully hydraulic free die forging hammer, high energy clutch-operated screw press, hot die forging mechanical press, automatic forging roll, cross wedge roll, auxiliary forging machines, automatic forging lines, die and forging process. The second category is piling machinery, including onshore hydraulic hammer, offshore hydraulic hammer, internal impact hydraulic hammer, internal impact hydraulic following pile hammer, hydraulic rapid impact compactor. The third category is fabricating machinery, including high speed servo-driven hydraulic press, rolling machine for ship, upper roller universal rolling machines, horizontal lower adjusting rolling machine, four roller rolling machine, rolling machines for autos, steel pipe rolling line, leveler and automatic sheet metal forming lines.

Our factory occupies 56,000 square meters, with nearly 20,000 square meters full steel frame workshop. Assembly workshop maximum lifting capability is over 100 tons. The metalworking workshop has large CNC and digital display metal cutting machines with maximum machining size of 4X12 meters. We have been certified by ISO9001 quality management system and CE certificate.

We also have one production research institute, BRIMET Production Research Center, mainly for improving products reliability, working accuracy and green intelligent. It has many independent intellectual property rights on forming technology, piling technology, equipment and system integrated technology. And it has got national and province rewards many times.

We will insist on the developing strategy of "controlling key, mastering core, basing on high-end and facing international", and adhering to business philosophy "adoring craftsman, to be diligent and pragmatic, pursuing excellence, to become pioneers". We will do our best to build the state-level and international competitive industrial base.





## YC系列液压打桩锤 YC series onshore hydraulic piling hammer



液压打桩锤是我们数十年以来专业从事液压冲击设备设计、使用、制造经验积累的结果，它设计精简，制造精良，打击能量可根据地质情况、沉桩深度随时进行调整，同一地质条件下可复制试验桩过程实现群桩作业程序化。液压打桩锤的桩帽可依客户要求设计制造，以适应各种形式与规格的混凝土预制桩打桩、钢管桩及钢板桩的沉桩作业施工。中机公司可提供各种规格的液压打桩锤，小至 36kJ，大无上限。简单可靠的设计、完美精致的制造、周到快捷的服务，可保证桩锤持续有效的发挥作用。

The hydraulic piling hammer is developed on the base of our decades of experience in designing, manufacturing and using hydraulic impact equipment (hydraulic hammer). The striking energy can be adjusted according to geological condition and pile sinking depth at any time. It can realize pile groups work programmable control by copying the process of trial pile. Pile cap can be designed according to customers' requirements. Various specifications can be provided from 36kJ to above.

### 主要技术参数 main tech.parameter

型号 type	单位 unit	YC-60	YC-80	YC-110	YC-120	YC-165	YC-180	YC-210	YC-255	YC-290
结构参数 structure parameters		05系列			10系列			20系列		
最大打击能量 max. striking energy	kJ	60	80	110	120	165	180	210	255	290
最大打击行程 max. striking stroke	mm	1200	1200	1200	1200	1200	1200	1200	1200	1200
锤头重量 ram weight	t	4	5	7	7	9	10	12	14	16
桩锤重量(不含桩帽) piling hammer weight (without cap)	t	8	9	11	16	18	19	26	28	30
打击频率 striking frequency	min <sup>-1</sup>	30-60	30-60	30-60	30-90	30-90	30-90	25-60	25-80	25-80

## 关键技术及特点 key techniques and features

全封闭锤体专利技术，为桩锤在野外恶劣的环境下，作业时的高可靠运行提供了保障；  
组合式锤头专利技术，通过不同锤头重量的组合可得到不同吨位级别的液压打桩锤，方便客户做出最合理的选择，性价比极高；  
组合式锤头专利技术，可延长打击力作用时间，有效保护混凝土预制桩桩头；  
高度集成的液压动力驱动技术，实现液压打桩锤高效、节能、环保要求；  
采用高压管线失压自动封堵技术，避免液压管线非正常破坏时造成的高压油泄漏；  
采用管路液压油排空技术，转场分解时保证液压管线内液压油能被排空，从而避免转场分解时管线内液压油的泄漏与污染；  
现代可编程控制技术，实现同一地质条件下沉桩过程打击能量、打击频率的一般控制与程序化控制，打击能量可在公称范围内任意设定；  
采用较为周到的传感技术及人机界面，实现沉桩过程桩锤压力、温度、位置及所在状态的自动化监控，实现桩锤的数字化控制及故障自动诊断显示。既可用导向装置导向打桩也可自由悬吊打桩。

Fully closed hammer housing(patent technology).  
The ram can be superposed to obtain different energy pile hammer(patent technology).  
The patent technology of superimposable ram can prolong the action time of striking energy.  
High integrated hydraulic driving system.  
Automatic plugging technology for high pressure pipeline pressure lose.  
Oil draining technology for pipeline, avoiding oil leakage and pollution when shifting to construction site.  
Program control, striking energy can be set arbitrarily in nominal range.  
Sensor technology, remote technology and man-machine interface realize pressure, temperature and location can be monitored.  
Not only can pile by the guidance devices but also can make free hanging piling.



主要服务于：高层及超高层建筑、港口拓展、水利堤坝、交通设施建设等陆地桩基基础施工建设，特别适用于各种形式与规格的混凝土预制桩打桩、钢管桩及钢板桩的沉桩作业施工。

It mainly applies in construction of high rise and super high rise buildings, harbor expanding, dams, transportation facilities, especially suitable for precast concrete piles piling, steel pipe piles and steel sheet pile sinking.

型号 type	单位 unit	YC-315	YC-360	YC-450	YC-550	YC-600	YC-700	YC-780	YC-900	YC-1000
结构参数 structure parameters		20系列		20A系列		30系列		40系列		40A系列
最大打击能量 max. striking energy	kJ	315	360	450	550	600	700	780	900	1000
最大打击行程 max. striking stroke	mm	1200	1200	1500	1500	1500	1500	1500	1500	1800
锤头重量 ram weight	t	18	20	20	24	26	30	35	40	40
桩锤重量(不含桩帽) piling hammer weight (without cap)	t	32	34	35	45	47	51	63	68	70
打击频率 striking frequency	min <sup>-1</sup>	25-80	25-80	25-70	25-70	25-70	25-70	25-70	25-70	25-70

## 中机液压打桩锤与柴油打桩锤比较

比较项目	中机液压打桩锤	柴油打桩锤
软地基适应性	打击能量、打击频率不受地基反作用力的影响，完全由操作者通过电子程序控制液压打桩锤打击过程，可避免漏桩现象，可以实现重锤轻打动作，轻打动作液压打桩锤打击效率比柴油锤高许多倍，具有高效率、大动能、低转速、小锤击应力特点。	柴油锤能否连续作业，取决于柴油的燃烧爆发过程，而这个过程的实现基于地基通过桩对锤心的反作用力大小，打击能量的大小往往取决于桩对锤心反作用力的大小而不是操作者，软地基施工时往往不能连续工作，甚至发生漏桩现象。
能量的可控性及连续性	程序控制方便准确，软地基、低冲程状态可实现高频次连续打击，同一地质条件下可复制试验桩过程实现群桩作业程序化。	特别是低冲程调控难度大，软地基不能实现连续打击，不可能实现群桩程序作业。
能源利用率	全液压力驱动技术的应用，能源利用率 67% 以上。	高温高压未充分燃烧的混合气体的排放导致大量的能量损失，能源利用率仅 20% 左右。
打击效率	组合式锤头技术、压桩技术的应用，液压锤的打击效率可达 60%—85%。	锤头反弹势能的变化，柴油锤打击效率仅为 25%—45%。
大型桩基工程的适应性	锤心重量可以做到 90 吨甚至更大，大型桩基工程的适应性强。特别是超高层建筑基础施工适应能力强。	由于大锤存在冷却、噪音、污染、控制等严重问题，一般情况锤心重量不超过 15 吨，适应性一般。
水下适应性	水下液压打桩锤可实现水下打桩作业。	不可以。
斜桩的适应性	可以倾斜打桩施工作业。	不可以。
城市作业的适应性	采用高效率柴油发动机或电机驱动，封闭箱体，可配备消音器，噪音可低于 75dB，少无污染，可适应城市作业。	柴油燃烧不充分，有大量的浓烟排放，柴油爆炸噪音高于 100dB，不能适应城市作业。

## 中机液压打桩锤与静压桩机比较

比较项目	中机液压打桩锤	静压桩机
城市作业	噪音可低于 75dB，以适应城市作业	可以
机重指标	轻巧	笨重，液压打桩锤的 10 倍以上
场地要求	一般性要求	场地承载能力要求高，施工场地大
转场费用	低	液压打桩锤的 5-10 倍以上
采购费用	低	液压打桩锤的 3 倍以上
大型桩基工程	适应大型及超大型钢管桩、预制桩施工，适应高层及超高层建筑基础施工。	一般性民用中高层建筑桩基施工。
适应性	可以分别适应水上、水下施工，可以适应高层及超高层建筑、港口拓展、水利堤坝、交通设施建设、大型桥梁等基础施工作业。海洋平台基础施工作业，可适应垂直、倾斜、水平桩作业。可适应边桩、角桩作业。对局部硬层的地基具有较强的穿透力。	仅适合城市或近郊民用中高层建筑相对集中的群桩基础作业，仅适用于垂直桩施工。对边桩、角桩难以适应。对存在局部硬层的地基难以适应。

## YCN系列内击式液压锤/YCNH系列夯击锤 YCN internal impact hydraulic hammer/YCNH compacting hammer

成孔钢管内置高度集成液动力系统，实现高效、节能，符合环保要求，结构简单，维护方便；  
非取土方式成孔、夯击成孔，桩端承载力远高于取土成孔，保持工作现场无污染；  
现代可编程控制技术，实现同一地质条件下沉桩过程打击能量、打击频率的一般控制与自动化控制，打击能量可在公称范围内任意设定；  
可配合桩机使用，共用液压力站，也可独立使用液压力站。

Integrated hydraulic driving system in steel tube realize high efficiency, energy saving and easy maintenance.  
Non borrow hole, tamping hole and high pile end capacity keep work environment no pollution.  
Program control technology, striking energy can be set arbitrarily in nominal range.  
Be able to use with pile machine and share one hydraulic power pack or use alone.



## YCNS系列内击式液压送桩锤 YCNS internal impact hydraulic following pile hammer

全封闭箱体，内置高度集成液动力系统；  
可配合静压桩机使用，大幅度提高工作能力，适用于砂石硬层的穿透；  
简单轻便，共用液压力站，也可独立使用液压力站。

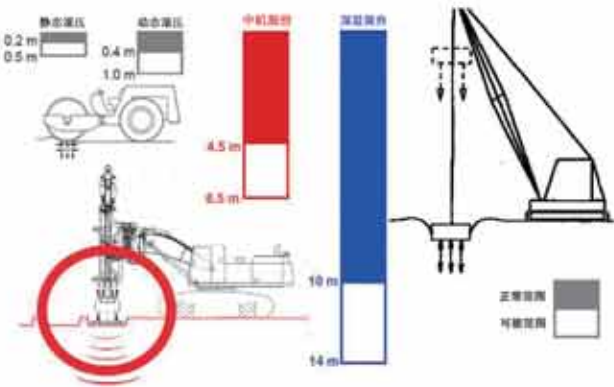
Fully closed housing, integrated hydraulic driving system.  
Matching with static pile pressing machines to improve work efficiency. Suitable for penetrating into the hard layer of sand.  
Simple and convenient, be able to share hydraulic power pack with other equipments or use alone.

## YCH系列高速液压夯实机 YCH series hydraulic rapid impact compactor

高速液压夯实机是利用其特有的液压锤专有技术专为压实松软地基研制的新一代机电液一体化的多功能基础施工设备,它可快速地安装于装载机、挖掘机或履带吊车,具有良好的机动性、可控性和高效性,是一种独特的高速夯实设备。

采用数字化控制,全液压驱动,夯击能量可实现无极调控,可完成平面夯实、斜面夯实、台阶夯实、沟槽夯实等复杂基础的夯实处理,影响深度可达3-10m。

It is a new generation of multi-function foundation construction equipment, suitable for soft foundation and can be assembled with loaders, excavators, crawler cranes. With good motility, control ability and high efficiency. Numerical control, fully hydraulic driving, stepless regulation of striking energy. Suitable for the flat planes, slopes, step planes, trench planes and other complex foundation planes etc.



### 关键技术及特点 key techniques and features

- 可方便快捷地更换多种类型的夯板、破碎器、桩导向器等专用装置,适应各类夯实、破碎、打桩等冲击作业;
- 实现程控夯击能量、程控夯击次数、单次夯击能量、总运行时间、总夯击次数的自动记载,便于夯击的质量控制和数据采集;
- 实现单次夯击与程控夯击,并可实现单次夯击能量设定,实现程控夯击能量、夯击步骤的设定;
- 实现夯机打击系统正常运行的自动监控;
- 直接安装于装载机、挖掘机或履带吊车上,具有良好的机动性、可控性和高效性,使用极其方便;
- 直接采用装载机、挖掘机或履带吊车的液压力,无须其他动力源,联接简单、快速、可靠;
- 夯机液压驱动与控制系统高度集成,结构简单,维护方便;
- 夯机锤始终直接接地,可避免冲击下落所产生的潜在危险和碎片飞溅。

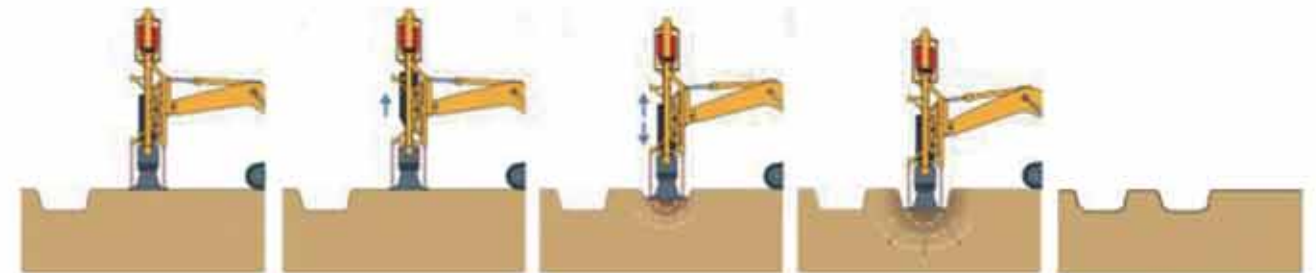
Tamping plate, breaker and pile guide can be changed conveniently. It suitable for variety impacting, crushing and piling work. It can realize single impacting and program impacting. Impact energy and steps can be set. Automatically record the impact energy, times, run hours which is convenient for further analysis of piling procedure. Monitoring running system automatically. Assembled with the loaders, excavators and crawler cranes. With good motility, control ability and high efficiency. Highly integrated hydraulic driving system and controlling system, simple structure and easy for maintenance. Impact compactor foot touches the ground all along when work, avoiding the potential danger and the splashed fragments.



主要服务于:桥台背、涵侧、新旧路交接处、路肩、护坡等公路、铁路路基夯实,堤坝及其护坡夯实,建筑沟槽及回填土夯实,环卫垃圾、有害物质填埋夯实等,必要时用于破碎、打桩。用于高速公(铁)路路基补强时,可使碾压达标路基继续沉降10cm以上。

高速液压夯实机是解决高速公路施工中存在的桥头跳车现象的最佳设备,是机场跑道及道路抢修的最优装备。

It is mainly suitable for abutment backs, culvert sides, joint areas between the new and old road, road shoulders, slope protections, construction trench, back filling soil and harmful materials landfilling compacting. It also can be used for crushing and piling. It is the best equipment to solve the problem of bumping at bridge-head and road rapid repair.



### 主要技术参数 main tech.parameter

型号 type	单位 unit	YCH-30	YCH-36	YCH-42	YCH-60	YCH-80	YCH-110
最大打击能量 max. striking energy	KJ	30	36	42	60	80	110
最大打击行程 max. striking stroke	mm	1200	1200	1200	1200	1200	1200
最大夯击直径 max.compacting diameter	mm	1000	1000	1000	1250	1500	1500
锤头重量 ram weight	t	2.5	3	3.5	4	5	7
夯机重量 total weight	t	5.9	6.4	6.9	8	9	11
打击频率 striking frequency	min <sup>-1</sup>	30-80	30-80	30-80	30-80	30-80	30-80

## YCS系列水下液压打桩锤 YCS series offshore hydraulic piling hammer



采用充压式全封闭锤体专利技术, 潜艇式设计, 可保证桩锤深水作业时液压驱动系统、控制系统、打击系统的正常工作, 并大大提高桩锤的传动效率;  
采用特殊设计的桩帽水位控制系统, 确保桩锤在深水环境下实现非触水打击, 大大提高桩锤的打击效率;  
采用独特的锤筒压力控制系统实现封闭锤体内压力的自动控制;  
采用经过锻造及热处理的长轴结构锤头、密闭的自动润滑系统确保桩锤打击系统高可靠运行;  
采用特殊的防腐防渗设计, 确保桩锤长期有效平稳工作。

Patented technology of pressure-filled type fully closed housing and submarine type designing, which ensure the hydraulic driving system, control system, striking system normal operation in deep water.  
Pile cap water level monitor system, realizing non-touching water striking in the deep water.  
Unique Pressure control system, realizing inner pressure automatic control in the closed hammer housing.  
Forged and heat-treated long shaft ram, airtight automatic lubrication system, ensuring operation with high reliability.  
Anti-corrosion and anti-seepage design, ensuring long service life.

### 关键技术及特点 key techniques and features

充压式全封闭锤体专利技术, 为桩锤在深水作业时的高可靠运行提供了保障;  
高度集成的液压动力驱动技术, 实现液压打桩锤高效、节能、环保要求;  
采用高压管线失压自动封堵技术, 避免液压管线非正常破坏时造成的高压油泄漏;  
采用管路液压油排空技术, 转场分解时保证液压管线内液压油能被排空, 从而避免转场分解时管线内液压油的泄露与污染;  
现代可编程控制技术, 实现同一地质条件下沉桩过程打击能量、打击频率的一般控制与自动化控制, 打击能量可在公称范围内任意设定;  
采用周到的传感技术及人机界面, 实现沉桩过程桩锤压力、温度、位置及所在状态的自动化监控、实现桩锤的数字化控制及故障自动诊断显示;  
既可用导向装置导向打桩也可自由悬吊打桩。

Pressure-filled type fully closed housing technique (patent) and high integrated hydraulic driving system.  
Automatic plugging technology for high pressure pipeline pressure lose avoiding oil leakage.  
Oil draining technology for pipeline, avoiding oil leakage and pollution when shifting to construction site.  
Program control, striking energy can be set arbitrarily in nominal range.  
Sensor technology, remote technology and man-machine interface realize monitoring pressure, temperature and location.  
Not only can pile by the guidance devices but also can make free hanging piling.

### 主要技术参数 main tech.parameter

型号 type	单位 unit	YCS-180	YCS-460	YCS-700	YCS-1000	YCS-1250	YCS-1500	YCS-1800	YCS-2100
结构参数 structure parameters		1010	2020A	3030	4040A	6050	8060	8075	8090
最大打击能量 max. striking energy	kJ	180	450	700	1000	1250	1500	1800	2100
最大打击行程 max. striking stroke	mm	1200	1500	1500	1800	1800	1800	1800	1800
锤头重量 ram weight	t	10	20	30	40	50	60	75	90
桩锤重量 (不含桩帽) piling hammer weight { without cap }	t	22	42	60	80	96	115	140	160
打击频率 striking frequency	min <sup>-1</sup>	25-70	25-70	25-70	20-60	20-60	20-60	20-60	20-60

主要服务于: 海洋工程水下基础施工, 其工程领域涉及海上油气平台、大型桥梁建设、导管安装、深水结构以及海上风电等大型海洋工程基础施工建设, 主要应用于各种形式与各规格的钢桩、预制桩打桩。

It mainly serves for the construction of underwater foundation for oceanographic engineering of which domain covers the following projects: offshore oil and gas platform, construction of large-scale bridges, installation of pipes, deep water structures and wind electricity engineering on the sea and such foundation construction of large-scale oceanographic engineering. It is mainly applied to making multi-types of steel piles and precast piles.



## PQ系列液压动力站

PQ series hydraulic power pack



液动力站由柴油发动机或电动机(也可采用柴油发动机)、油泵、液压组件、油箱、空压机、控制柜集成安装在一个具有降噪功能的仿集装箱的钢板柜内,组成一个独立的可移动的液动力站。钢板柜采用多层屏蔽阻抗装配式结构,在保护这些部件的同时,降低了运行噪音,方便了维护、保养、吊装及运输。

The hydraulic power pack is an independent and movable cabinet. It is powered by diesel engine or motor, oil pump, hydraulic parts, oil tank, air compressor, controlling cabinet etc., which are integrally installed in a soundproof steel cabinet (like a container). This steel cabinet is multiple-shielded, which not only protect components, but also reduce the running noise, and is convenient for maintenance, lifting and transportation.

### 关键技术及特点 key techniques and features

- 强抗腐蚀构造:  
罩身为钢板,方管骨架,外漆为特殊防腐材料,抗腐蚀性能力强,所有螺丝均镀锌,极具耐腐蚀性,所有锁具均由不锈钢材料制作;
- 高度安全性能:  
良好的通风系统及防热辐射结构,高效的减震措施确保动力站运行平稳,内置或顶置消音系统,保证操作人员的安全,内置油箱,外置加油口,外置紧急停车按钮;
- 操作维护方便:  
设有开启门,供安装、观察、维护、操作使用,在开启门及其他适当位置设有控制屏观察窗,可通过该窗检测控制面板;
- 噪音低,经济环保:  
设有进排风口,箱体进排风口为回流式风道,确保排风散热顺畅,设有消音器,并采用新型专用吸音材料,动力站运行安静,噪音低于 75db(A),不影响日常生活,操作简单、方便,无需建造机房,适应露天使用;
- 高可靠的设计:  
动力站采用电动机驱动也可采用柴油发动机,采用国内知名的液压泵阀,高度集成化设计,确保动力站安全高效可靠运行。

Steel plate cover, square tube framework, anticorrosion paint, hot dip galvanized bolts and nuts, stainless steel locks.  
Good ventilation system, thermal radiation protection structure, high-efficiency vibration damping system ensuring stable work. Sound proof system ensuring safety for the operators.  
Door for installation, observation and maintenance. Windows for observing the control panel.  
Air inlet and outlet as reverse-flow type air flue, ensuring smooth air exhausting and heat dissipation. Its silencer is made of acoustic material to keep noise less than 75db(A).  
Using Cummins diesel engine or motor, well known brand hydraulic pumps and valves, highly integrated designing ensure the power pack safety and high-efficiently work.

### 主要技术参数 main tech.parameter

型号 type	单位 unit	PQ-160	PQ-300	PQ-400	PQ-800
电动机功率 motor power	kW	55	110	220	275
系统工作压力 working pressure	mPa	25	25	25	25
最大工作流量 max. working flow	L/min	165	360	720	900
液压油箱容量 pressure of tank capacity	L	800	1400	2600	3000

