

重庆康明斯发动机有限公司

地址：重庆市沙坪坝区烈士墓

电话：+86-23-65335888-3226/3291

传真：+86-23-65315379

热线：+86-4008899990

邮编：400031

网址：www.cummins-cq.com

版本号：20200501-13

CHONGQING CUMMINS ENGINE COMPANY Ltd.

Add:Lieshimu Shapingba,Chongqing P.R.China

Tel:+86-23-65335888-3226/3291

Fax:+86-23-65315379

Hotline:+86-4008899990

P.C:400031

Http://www.cummins-cq.com

Bulletin :20200501-13

动之以能 持之以恒

重庆康明斯油气田用 发动机选型指南 250-2500马力

Engine Model Selection



公司简介

Company Profile

重庆康明斯发动机有限公司，是美国康明斯公司在中国投资的第一家重型和大功率发动机制造基地，也是中国内燃机行业第一家中外合资企业，是中国产销量和用户保有量最大的排量 11 升至 50 升重型及大功率柴油发动机制造企业。

重庆康明斯致力于为中国油气田用户提供全面的动力解决方案和完整的价值包。

把用户放在第一位并提供真正的价值，获得所有用户的终生信赖是重庆康明斯的核心价值观。

重庆康明斯主导产品功率覆盖 175-2500 马力。产品广泛应用于钻井、混沙、固井、压裂和修井等设备。其优异的动力性、经济性、可靠性、耐久性和安全性受到中国和全球用户一致赞许。

重庆康明斯发动机有限公司经法国 BVQI 认证，获得 ISO9001 和 TS16949 质量体系认证，ISO14001 和 OHSAS18001 职业健康安全和环境管理认证。

重庆康明斯发动机有限公司主导产品荣获中国国家产品质量奖和国家科技进步奖。企业连续多次荣获“中国机械工业 500 强”、“重庆市工业企业 50 强”、“重庆市十佳外商投资企业”、“重庆市质量效益型优秀企业”等荣誉称号。

Chongqing Cummins Engine Company Ltd. (CCEC) is the first heavy duty and high horse-power diesel engine manufacturing base invested by Cummins Inc. USA. It is the first joint venture plant in internal combustion industry of China and also the biggest heavy duty and high horse-power engine (maximum displacement from 11L to 50L) producer and seller as well as with the largest customer population in this area.

CCEC is committed to provide comprehensive power solutions and complete set of value package for OEMs in gas & oil area in China.

Put the customers first and provide them with true values and obtain the lifetime trust from them is our core value.

The power range of the prime products of CCEC varies from 175-2500hp. These products are widely used in rigs, slurry pump, fracturing truck and well cementation equipment etc.. Characterized by the robust power, fuel economy, reliability, durability and safety, these products are highly praised by customers in China and all over the world.

CCEC has been certified by authoritative Bureau Veritas Certification and has obtained the ISO9001/TS16949 quality system certification, ISO14001 and OHSAS18001 occupational HSE certification.

The prime products of CCEC have won China National Quality Award and the National Prize for Progress in Science and Technology. The plant continuously won the titles of China Top 500 Machinery Industrial Enterprises, Chongqing Top 50 Industrial Enterprises, Chongqing Top 10 FIEs and Quality & Benefit Oriented Enterprises.

主要产品

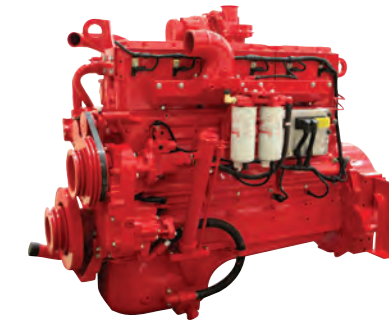
Products

重庆康明斯严格遵循康明斯公司的技术和质量标准，制造耐用、可靠的四冲程柴油发动机，包括机械式和模块化电子控制的两种类型。发动机满足中国排放标准。

CCEC follows Cummins Technology and quality standards, manufactures tough and dependable four-cycle diesel power, including mechanically and electronically controlled emissions compliant diesel engine platforms .

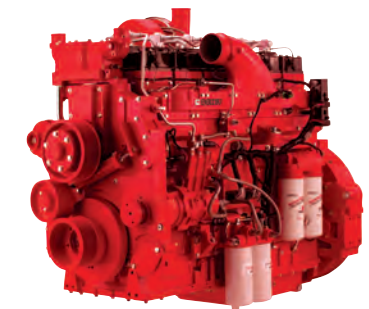
NT/QSN

排量
Displacement
14L
功率范围
Power Range
185-525HP
(138-391kW)
参考重量
Reference Weight
1280 (kg)



KTA19/QSK19

排量
Displacement
19L
功率范围
Power Range
450-896HP
(336-669kW)
参考重量
Reference Weight
1820 (kg)



KTA38/QSK38

排量 Displacement
38L
功率范围
Power Range
780-1845HP
(582-1377kW)
参考重量
Reference Weight
3723 (kg)



K50/QSK50

排量 Displacement
50L
功率范围
Power Range
1250-2500HP
(932-1679kW)
参考重量
Reference Weight
5500 (kg)



发动机型谱

Engine Ratings

序号 List	系列 Series	机型 Model	额定功率 /额定转速 kW/rpm	最大扭矩 /转速 N.m/rpm	排放法规 Emission	功率标定 间歇/持续 Rating Type Intermittent /Continuous	应用Application					主要配置 Configuration
							压裂 Fracturing	固井 Cementing	修井 Well Servicing	泥浆泵 Mud Pump	钻井 Drilling	
1	NT	NT855-C280	209/2100	1139/1500		间歇		●				带重型空滤器、空压机、SAE #2飞轮
2		NTA855-C310	231/2100	1261/1400		持续		●	●			带柔性盘
3		NTA855-C360	269/2100	1464/1400		持续		●	●			带柔性盘
4		NTA855-C400	298/2100	1559/1500		持续			●			带SAE#1飞轮壳、空压机、启动马达、充电机
5		NTA855-C420	313/1800	1559/1500		间歇				●		可选重型空滤器、柔性盘、风扇、空压机
6		NTA855-C450	336/2100	1763/1400		间歇			●			带空压机、SAE#1飞轮壳、飞轮、启动马达、重型空滤器
7	QSNT	QSNT-C360	269/2100	1464/1400	ECE R96H STAGE IIIA, 京III	持续		●	●			可选重型空滤器、柔性盘、风扇、空压机
8		QSNT-C400	298/1800	1710/1300	ECE R96H STAGE IIIA, 京III	持续		●	●			带重型空滤器、空压机、SAE #1飞轮、消声器
9		QSNT-C400	298/2100	1559/1500	ECE R96H STAGE IIIA, 京III	持续		●	●			带重型空滤器、空压机、SAE #1飞轮、消声器
10		QSNT-C450	336/1800	1850/1300	ECE R96H STAGE IIIA, 京III	持续		●	●			可选重型空滤器、柔性盘、风扇、空压机
11		QSNT-C450	336/2100	1900/1400	ECE R96H STAGE IIIA, 京III	持续		●	●			可选重型空滤器、柔性盘、风扇、空压机
12		QSNT-C500	373/2000	2100/1400	ECE R96H STAGE IIIA, 京III	间歇		●	●	●		带重型空滤器、SAE #1飞轮、风扇、消声器
13		QSNT-C500	373/2000	2100/1400	ECE R96H STAGE IIIA, 京III	间歇		●	●	●		带重型空滤器、空压机、SAE #1飞轮
14	K19	KT19-C450	335/2100	1830/1500		间歇		●				带柔性盘、带水箱、风扇、空压机、启动马达
15		KTA19-C525S10	392/2100	2136/1500		间歇		●				带柔性盘、带空压机、启动马达、充电机
16		KTA19-C525	392/1800	2136/1500		间歇		●		●		带柔性盘、带空压机、启动马达、充电机
17		KTA19-C600	448/2100	2237/1500		间歇		●				带柔性盘、带空压机、启动马达、充电机
18		KTA19-C650	495/2100	2237/1500		间歇				●		带柔性盘、带空压机、启动马达、充电机
19		KTA19-C700	522/1900	2967/1500		间歇				●	●	带重型空滤器、SAE #1飞轮、消声器
20		KTTA19-C700	522/2100	2730/1400		间歇	●			●	●	带重型空滤器、SAE #2飞轮、消声器
21		KTA19-C755	563/1900	2997/1500		间歇	●				●	带普通空滤器、SAE #1飞轮、消声器
22	QSK19	QSK19-C506	377/1800	2755/1300	Tier 3 / Stage III	持续	●				●	带柔性盘、带空压机、启动马达、充电机
23		QSK19-C525	391/2000	2407/1500	Tier 3 / Stage III	间歇	●				●	带柔性盘、带空压机、启动马达、充电机
24		QSK19-C560	418/2000	2407/1500	Tier 3 / Stage III	间歇	●				●	带柔性盘、带空压机、启动马达、充电机
25		QSK19-C600	447/2000	2643/1500	Tier 3 / Stage III	间歇	●				●	带柔性盘、带空压机、启动马达、充电机
26		QSK19-C675	503/1800	2980/1500	Tier 3 / Stage III	间歇	●				●	带柔性盘、带空压机、启动马达、充电机
27		QSK19-C700	522/1800	2981/1500	Tier 3 / Stage III	间歇	●				●	带柔性盘、带空压机、启动马达、充电机
28		QSK19-C700	522/2000	2981/1500	Tier 3 / Stage III	间歇	●				●	带柔性盘、带空压机、启动马达、充电机
29		QSK19-C755	563/1800	3084/1400	Tier 2 / Stage III	间歇	●				●	带柔性盘、带空压机、启动马达、充电机
30		QSK19-C760	567/2100	3084/1500	Tier 2 / Stage III	间歇	●				●	带SAE#0湿式飞轮壳、带柔性盘、带水箱、风扇
31		QSK19-C800	597/2100	3086/1500	Tier 2 / Stage III	间歇	●				●	带重型空滤器、SAE #1飞轮
32		QSK19-C800	597/1900	3186/1700	Tier 2 / Stage III	间歇	●				●	带重型空滤器、SAE #1飞轮

发动机型谱

Engine Ratings

序号 List	系列 Series	机型 Model	额定功率 /额定转速 kW/rpm	最大扭矩 /转速 N.m/rpm	排放法规 Emission	功率标定 间歇/持续 Rating Type Intermittent /Continuous	应用Application					主要配置 Configuration
							压裂 Fracturing	固井 Cementing	修井 Well Servicing	泥浆泵 Mud Pump	钻井 Drilling	
33	K38	KT38-C780	582/1900	3400/1500		间歇	●					带SAE#0湿式飞轮壳、带柔性盘、带水箱、风扇
34		KT38-C780	582/2100	3400/1500		间歇	●					带SAE#0湿式飞轮壳、带柔性盘、带水箱、风扇
35		KTA38-C900	672/1800	3684/1500		间歇	●					带重型空滤器、空压机、SAE#0飞轮、风扇、水箱、消声器
36		KTA38-C1000	746/1800	4415/1400		间歇	●			●		带重型空滤器、空压机、SAE#0飞轮、风扇、水箱
37		KTA38-C1050	783/2100	4068/1500		间歇	●			●		带SAE#0湿式飞轮壳、带柔性盘、带水箱、风扇
38		KTA38-C1100	821/1800	4790/1500		间歇	●			●		带SAE#0湿式飞轮壳、带柔性盘、带水箱、风扇
39		KTA38-C1200	854/1900	4475/1500		间歇	●			●		带SAE#0湿式飞轮壳、带柔性盘、带水箱
40		KTA38-C1200	895/2100	4475/1500		间歇	●			●		带SAE#0湿式飞轮壳
41		KTA38-C1300	970/1800	5404/1500		间歇				●		带空压机、SAE#0飞轮
42		KTA38-C1300	970/2000	5404/1500		间歇	●				●	带空压机、SAE#0飞轮
43		KTA38-C1350	1350/1900	5500/1400		间歇					●	带空压机、SAE#0飞轮
44		KTA38-C1400	1045/1800	5889/1300		间歇	●			●	●	带SAE#0湿式飞轮壳、带柔性盘、带水箱、风扇
45		KTA38-C1400	1045/1900	5650/1400		间歇	●			●	●	带SAE#0湿式飞轮壳、带柔性盘
46		KTTA38-C1500	1119/1900	5938/1400		间歇	●				●	带SAE#0飞轮
47	QSK38	QSK38-C1086	810/1800	4869/1350	Tier 2 / Stage III	持续	●			●	●	可选重型空滤器、柔性盘、风扇、空压机
48		QSK38-C1200	895/1800	5235/1400	Tier 2 / Stage III	持续	●			●	●	可选重型空滤器、柔性盘、风扇、空压机
49		QSK38-C1260	940/1800	5496/1400	Tier 2 / Stage III	持续	●			●	●	可选重型空滤器、柔性盘、风扇、空压机
50		QSK38-C1350	1007/1800	5749/1500	Tier 2 / Stage III	间歇	●				●	可选重型空滤器、柔性盘、风扇、空压机
51		QSK38-C1530	1141/1800	6153/1500	Tier 2 / Stage III	间歇	●				●	可选重型空滤器、柔性盘、风扇、空压机
52		QSK38-C1600	1119/1800	6242/1500	Tier 2 / Stage III	间歇	●				●	可选重型空滤器、柔性盘、风扇、空压机
53	K50	KTA50-C1600	1194/2100	5966/1500		间歇	●				●	带重型空滤器、风扇、空压机
54		KTA50-C1800	1342/1900	7078/1500		间歇	●				●	带SAE#0湿式飞轮壳
55		KTTA50-C2000	1492/1900	7864/1500		间歇	●				●	带SAE#0湿式飞轮壳
56		KTTA50-C2250	1659/2100	7864/1500		间歇	●				●	带SAE#0湿式飞轮壳
57	QSK50	QSK50-C2000	1491/1900	7871/1500	Tier 2 / Stage III	间歇	●					带空压机、SAE#0飞轮
58		QSK50-C2300	1715/1900	8832/1500	Tier 2 / Stage III	间歇	●					带空压机、SAE#0飞轮
59		QSK50-C2500	1864/1900	9601/1500	Tier 2 / Stage III	间歇	●					带空压机、SAE#0飞轮
60		QSK50-C2500	1864/1900	9601/1500	Tier 2 / Stage III	间歇	●					带SAE#00湿式飞轮壳
61		QSK50	1328/1500		Tier 2 / Stage III	间歇					●	带SAE#00干式飞轮壳 (1328kW/1780hp 电动钻机应用)

备注：根据用户具体情况可立项满足用户要求，发动机配置可选用空滤器、空压机、飞轮及飞轮壳（柔性盘及湿式飞轮壳）、风扇、水箱、消音器、仪表箱

一、发动机选型步骤

1. 基本信息确认

- 设备类型：压裂车、泥浆泵、混砂车、固井机、修井机、机械钻机、电动钻机。
- 设备总功率
- 使用工况和环境：持续工况、常用工况、间歇工况、最大功率；常用地区、高海拔、海洋、高寒、高温、高湿、高风沙。
- 设备组合方式：单台、多台组合、多组。
- 排放法规：无排放要求、非道路 I、非道路 II、非道路 III、Tier I、Tier II、Tier III、……
- 总体布置：箱式、静音、撬装、车载上装、上下车共用；冷却系统、进排气系统、燃油系统、控制系统、制动系统。
- 传动系统：离合器、变速箱、传动轴、工作泵、附件驱动、液压泵。
- 控制系统：机旁、远控、机械、电控。
- 启动方式：电动、液压、气动、机械。

2. 发动机选型

型谱、附件、接口、特殊要求。

3. 方案确定：与重庆康明斯确定选型方案。

4. 技术协议签订：发动机型号及性能参数，配套技术说明，其它注意事项。

5. 安装评审：首台样机需要在主机厂交付用户前，由主机厂与重庆康明斯联合进行安装评审及测试，以满足发动机技术要求。

6. 参考标准

中国石油行业设备标准：SY/T 6918。

美国石油行业设备标准：API SPEC 7K。

汽车发动机净功率测试方法：GB/T 17692。

Reference for Engine Model Selection

1. Confirmation of Basic Information

- Equipment type:Fracturing truck, mud pump, well cementation machine, workover rig, mechanical drilling and electric drilling.
- Total power of equipment.
- Working condition and environment: Continuous working condition, common working condition, intermittent working condition and maximum power; Common areas, high altitude, ocean, high and cold, hot, wet, and high, dusty.
- Combination method of equipment: Single piece, multi-piece unit and multi-unit.
- Emission: No emission requirement, non-road I, non-road II, non-road III, Tier I, Tier II and Tier III.
- General arrangement:Box-type, mute, skid-mounted, truck-mounted, used for both Pump and truck driven; Cooling system, intake and exhaust system, fuel system, control system and brake system.
- Drive system:Clutch, transmission, drive shaft, working pump, accessory drive and hydraulic pump.
- Control system:Local, remote, mechanical and electric control.
- Starting mode:Electric, hydraulic, pneumatic and mechanical.

2. Engine Model Selection:Model rating, accessories, interfaces and special requirements.

3. Determination of Scheme:Determine the model selection scheme with CCEC.

4. Technical Agreement Signing: Engine model and performance parameters, description of application technology and other notes.

5. Installation Review:Before the first prototype engine arrived end user, OEM and CCEC shall jointly carry out installation review and test, so as to meet the technical requirement of engine.

6. Reference Standards:

China Petroleum Industry Equipment Standard: SY/T 6918. US Petroleum Industry Equipment Standard: API SPEC 7K. Measurement Methods of Net Power for Automotive Engines: GB/T 17692.

二、发动机适配功率计算

发动机额定功率 = $P/a_1/a_2/a_3+B_1+B_2+B_3$

- 确定传动系统零部件的传动效率 a，例如：离合器 a1，传动轴 a2，变速箱 a3。
- 确定泵的轴输出功率 P，并确认工作泵的实际工况，例如：发动机 24 小时连续或间歇功率使用情况。
泵功率 = 排量 × 压力 / 效率 (0.85)
- 确定发动机所需附件功率时需考虑附件功率损失，例如：风扇 B1、启动马达 B2、发电机 B3 等。
- 确定接口：通常飞轮壳 N 系列发动机 SAE 1 号；K19 系列发动机 SAE 1 号；K38、K50 系列发动机 SAE 0 号。通常选配接口为柔性盘或飞轮，选择柔性盘时为湿式飞轮壳，选择飞轮时为干式飞轮壳。
- 高原机的选型情况：康明斯的数据单对每一款发动机都有使用海拔说明，一旦出现超过使用高度时，就需要根据海拔高度和环境温度对发动机功率输出修正后再选型。
- 鉴于油气田设备大多在间歇工况条件下使用，因此在实际工况中对发动机功率需要进行修正，可参考重庆康明斯技术部提供发动机性能曲线、数据单。
- 根据所计算的发动机额定功率参照重庆康明斯提供的发动机型谱进行选型配套。



Calculation of Engine Adapted Power

Rated power of engine = $P/a_1/a_2/a_3+B_1+B_2+B_3$

- Determine the drive efficiency "a" of the components in drive system, such as clutch a1, drive shaft a2 and transmission a3.
- Determine the shaft output power P of the pump and confirm the actual working condition of working pump, such as the 24-hour continuous or intermittent power utilization condition of engine.
Pump power = pump capacity * pressure / efficiency (0.85)
- The power loss of accessories shall be considered during determination of the necessary accessory power for engine, such as fan B1, starting motor B2 and generator B3, etc.
- Determine the interface: in general, flywheel housing N-series engine SAE No.1, K19-series engine SAE No.1 and K38-series and K50-series engine SAE No.0. The selected interface is generally flexible disk or flywheel. Flexible disk selects the wet-type flywheel housing and flywheel selects the dry-type flywheel housing.
- Model selection of plateau engine: the data sheet of Cummins specifies the operating altitude of each engine. Once the altitude exceeds the operating altitude, the power output of engine shall be corrected according to the altitude and operating temperature before model selection.
- As oil and gas field equipment mostly operates under intermittent working condition, the power of engine shall be corrected in the actual working condition in reference to the performance curve and data sheet of engine provided by Technical Dept. of CCEC.
- According to the calculated rated power of engine, refer to the model spectrum provided by CCEC to carry out model selection and matching.

三、发动机配套系统的选定

1. 冷却系统

● 散热器

散热器必须保证设备在最高环境温度下工作时发动机的出水口温度，不超过参数表的限定值，注意考虑环境温度差异对散热器面积和效率需求。

● 风扇

风扇重量不能超过风扇轮毂要求的最大重量和弯矩，风扇功率不能超过风扇驱动装置的最大驱动功率。

● 冷却液

必须使用发动机操作保养手册和康明斯服务公告规定的冷却液（康明斯所有发动机禁止使用水作为冷却液）。

2. 进气系统

● 进气系统的滤清效率必须满足发动机的使用要求。

● 进气系统必须有足够的容灰度以提供合理的滤芯更换周期。

● 进气系统装备所有附件后，发动机在最大进气流量下，进气阻力不得大于发动机技术参数表上规定的限定值。

● 进气系统应保证正常工作时进气温升最大值不得超过发动机技术参数表上规定的限定值。

● 进气系统对发动机进气口产生的弯矩应小于发动机技术参数表上规定的限值。

3. 排气系统

● 在发动机额定负荷和转速工况下，排气系统产生的排气背压不得大于发动机技术参数表上或安装要求上规定的限定值。

● 排气系统应防止水、沙粒、泥浆、残渣等异物进入发动机排气管路。

● 对于竖直布置的排气系统需要设计有排水孔，用以避免排气系统的冷凝水倒流进入发动机的排气系统，损害发动机。

● 排气系统排出的尾气远离空气滤清器等进气系统，以免提高进气温度；远离冷却系统，以免引起发动机过热；远离驾驶员，以免引起人生伤害。

● 可选择灭火花式消声器以满足油气田特殊要求。

4. 发动机附件

● 空气压缩机：发动机上机械式驱动的液压泵或其它附件都不能超过极限。如果超过极限，必须使用尾部支撑进行支撑。安装支架后系统的固有频率必须超过发动机最大转速下点火频率的 10% 以上。

● 液压泵（转向泵）：驱动功率，扭矩不能超过限定值。驱动连接（花键尺寸）要满足 SAE J744。

● 前端取力，参考发动机数据单或咨询重庆康明斯工程师。

5. 传动系统

● 变速箱的离合器要有缓冲弹簧来控制传动系的振动，选用的发动机飞轮必须与离合器缓冲弹簧和摩擦面匹配，使用超速档变速箱时，不能超过“使用超速档变速箱时的传动比要求”中规定的传动系转速和长度极限。最大传动轴限速小于 3600rpm，传动轴长度限定值小于 1905mm。与发动机变速箱匹配的液力变矩器必须是康明斯和变速箱制造商许可的型号。

6. 安全建议

● 为确保设备能在寿命期内正常使用，设备输出连接、仪表控制、启动方式、蓄电池与充电、压裂泵组与发动机保护、系统报警及超压保护、发动机冷却、排气、通风、燃油与供给等系统的选择，可参考国际油田设备行业标准及安全防护规范。

● 对发动机操作人员需进行防护措施培训，预防发动机故障时可能带来的人身伤害。

Equipped System Selection

1. Engine Cooling

● Radiator

With operation of the radiator, it shall be ensured that when the equipment is working in the maximum operating temperature, the water outlet temperature of engine will not exceed the limit in Engine Parameter List. Pay attention to the necessary radiator Cooling area and efficiency for different operating temperatures.

● Fan

The weight of fan shall not exceed the maximum weight and bending moment required by fan hub. The power of fan shall not exceed the maximum drive power of fan drive device.

● Coolant

The coolant for utilization shall be the one specified in Engine Operating and Maintenance Manual and CCEC Service Announcement (it is prohibited to use water as the coolant for all CCEC engines).

2. Air Intake of Engine

● The filtering efficiency of intake system must meet the operating requirements of engine.

● The intake system shall be of enough dirt holding capacity, so as to provide reasonable replacement cycle for filter element.

● After the intake system is equipped with all accessories, under the maximum intake airflow, the intake resistance of engine shall not exceed the limit specified in Technical Parameter List of Engine.

● With operation of the intake system, it shall be ensured that the maximum value of intake air temperature rise during normal operation will not exceed the limit specified in Technical Parameter List of Engine.

● The bending moment produced by intake system for the air intake of engine shall be less than the limit specified in Technical Parameter List of Engine.

3. Air Exhaust of Engine

● Under the rated load and speed of engine, the exhaust back pressure produced by exhaust system shall not exceed the limit specified in Technical Parameter List of Engine or installation requirements.

● Exhaust system shall prevent water, grains of sand, mud, residues and other foreign matters from entering engine exhaust pipeline.

● For vertical exhaust system, water outlets shall be designed, so as to avoid condensed water of exhaust system from flowing back into the exhaust system of

engine and damaging the engine.

● The tail gas discharged from exhaust system shall be away from the intake system including air filter, gas so as to avoid increasing the intake temperature, the tail exhaust gas shall be away from cooling system, so as to avoid overheat of engine; the tail gas shall be away from the driver to avoid personal injury.

● Fire extinguishing muffler can be selected to meet the special requirements.

4. Accessories of Engine

● Air compressor: the mechanically driven hydraulic pump or other accessories on engine shall not exceed the limits. If they exceed the limits, rear support shall be used. After the support is installed, the inherent frequency of the system must exceed over 10% of the ignition frequency at the maximum engine speed.

● Hydraulic pump (steering pump): the drive power and torque shall not exceed the limits. Drive connection (spline size) shall meet SAE J744.

● The front-end power takeoff shall be selected in reference to Engine Data Sheet or through consulting CCEC engineers.

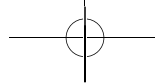
5. Engine Drive

● Buffer spring shall be provided for the clutch of gearbox, so as to control vibration of drive train. The selected flywheel of engine must match with the buffer spring and friction surface of clutch. When the overdrive gearbox is used, do not exceed the drive train speed limit and length limit specified in Drive Ratio Requirements During Operation of Overdrive Gearbox. The speed limit of maximum drive shaft is less than 3600rpm and the length limit of drive shaft is less than 1905mm. The hydraulic torque converter matched with engine gearbox shall be the model permitted by CCEC and the gearbox manufacturer.

6. Safety Suggestions

● In order to ensure normal operation during the service life of equipment, please refer to International Oil Field Equipment Industry Standard and Safety Protection Specification for selection of equipment output connections, instrument control, starting method, storage battery and charging, fracturing pump set and engine protection, system alarm and over-voltage protection, engine cooling, air exhaust, ventilation, fuel and supply systems and other systems.

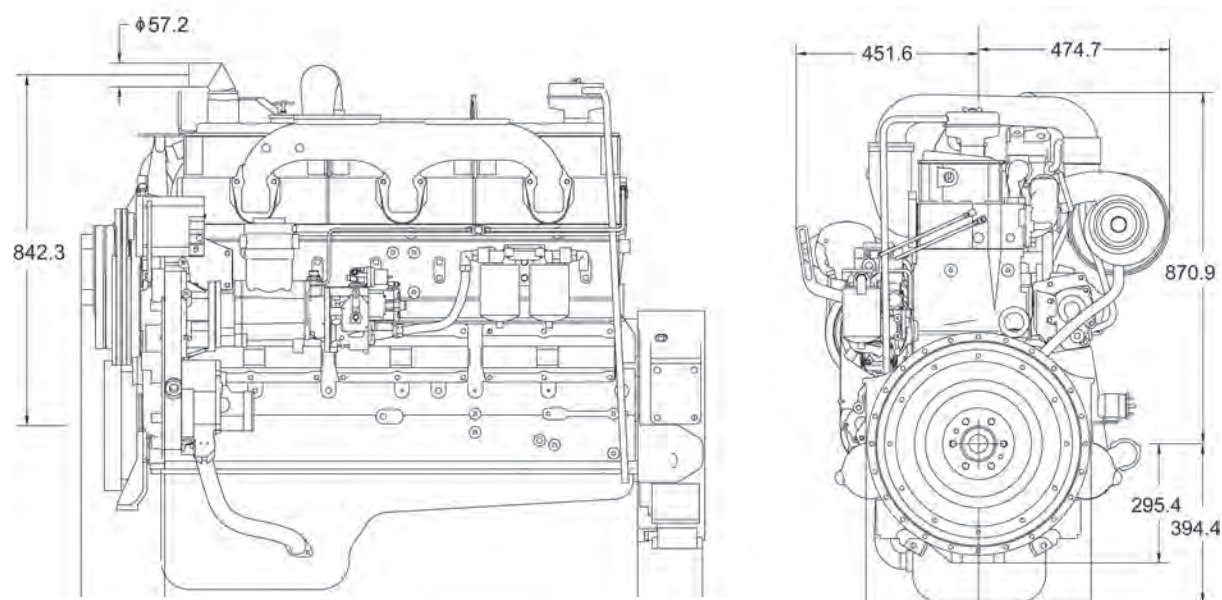
● Protective measures training shall be carried out for engine operators, so as to avoid possible personal injury during engine fault.



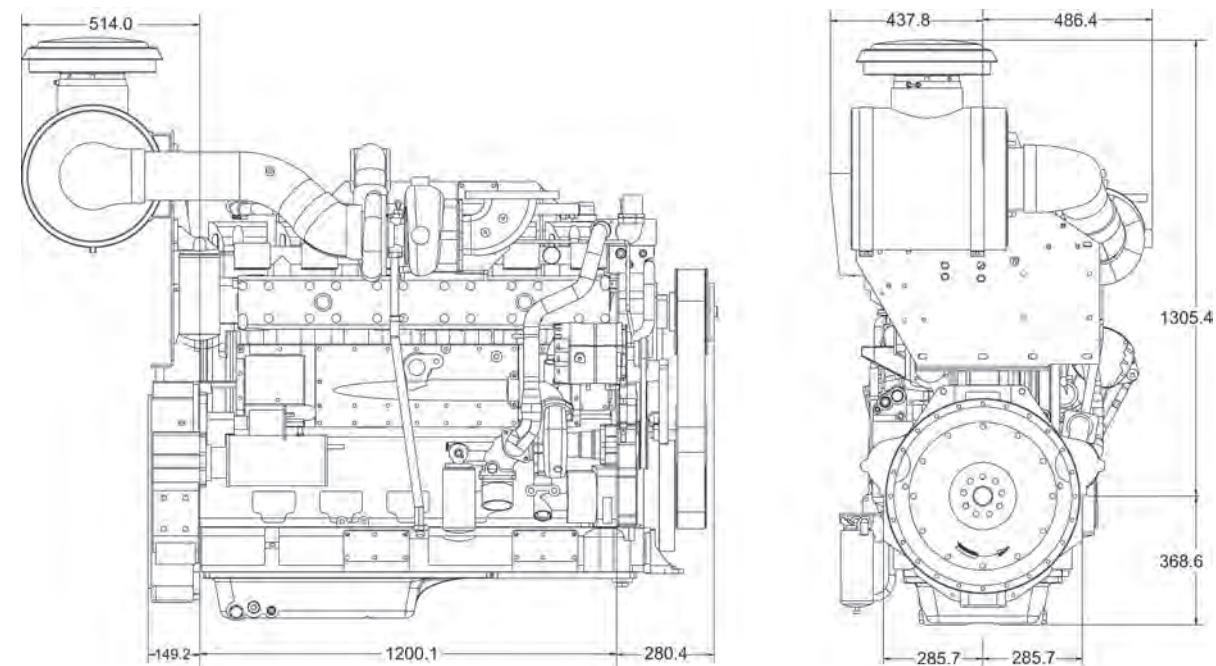
发动机外形图

Installation Diagram

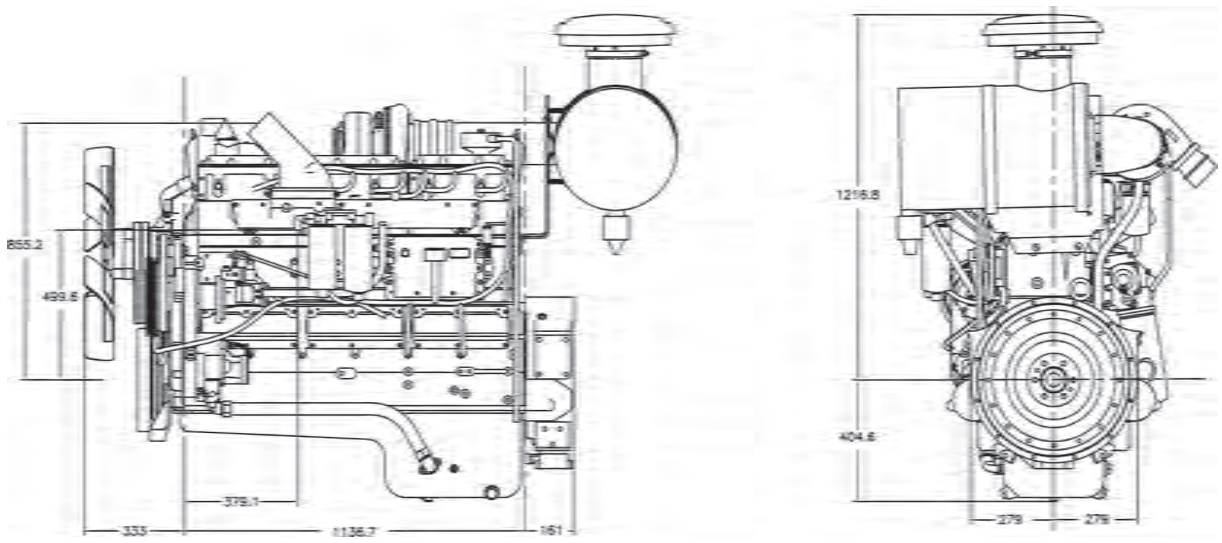
NT



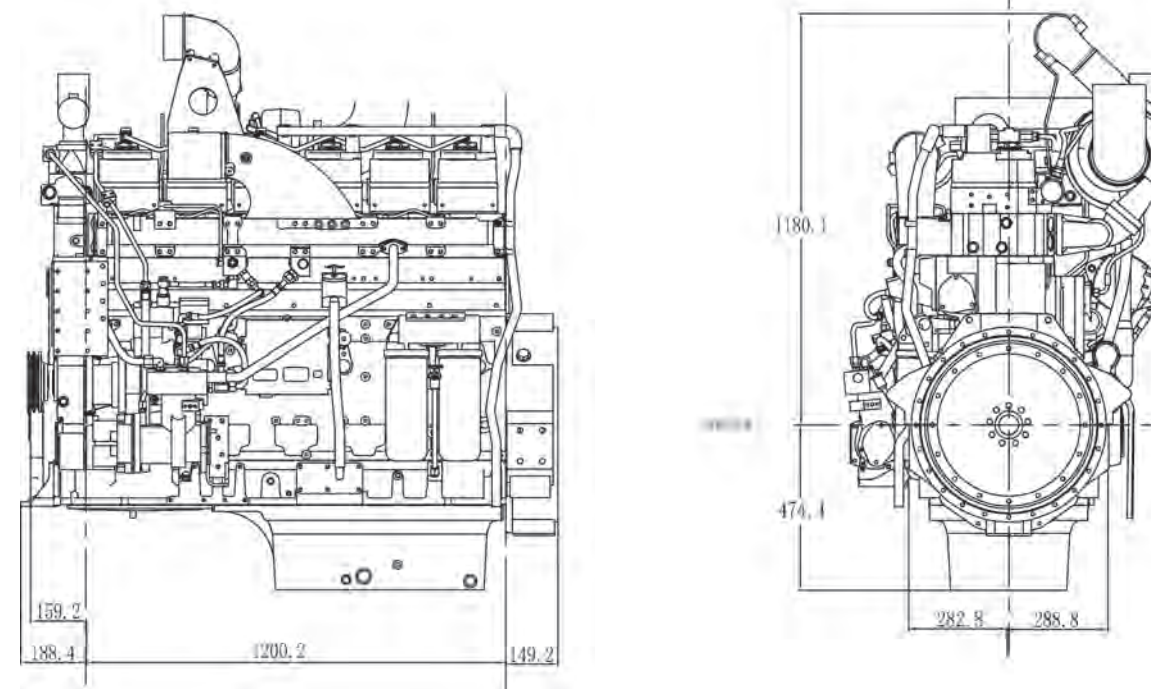
K19

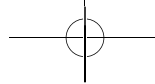


QSNT



QSK19





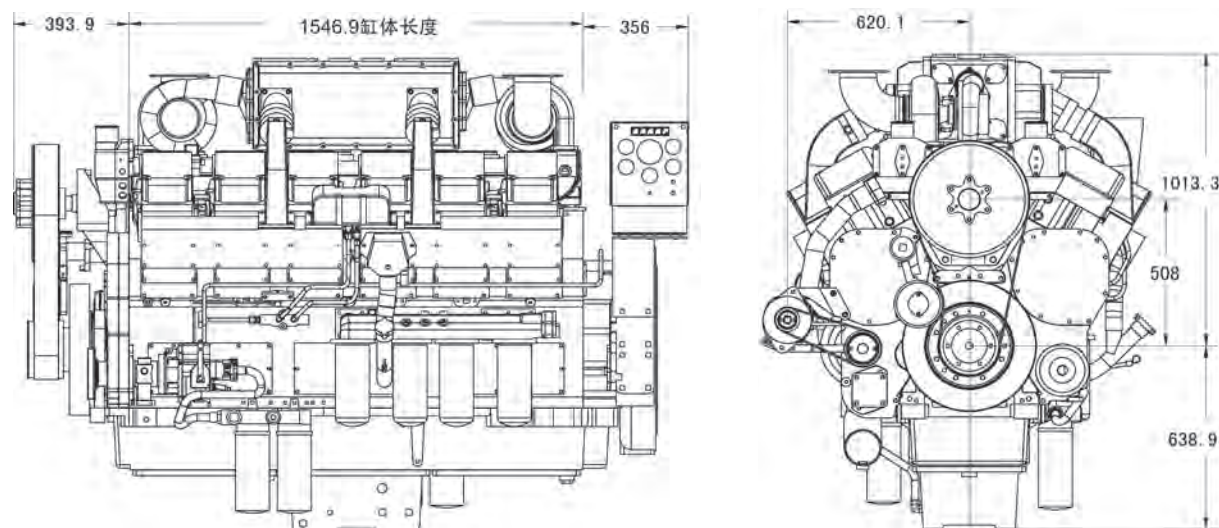
发动机外形图

Installation Diagram

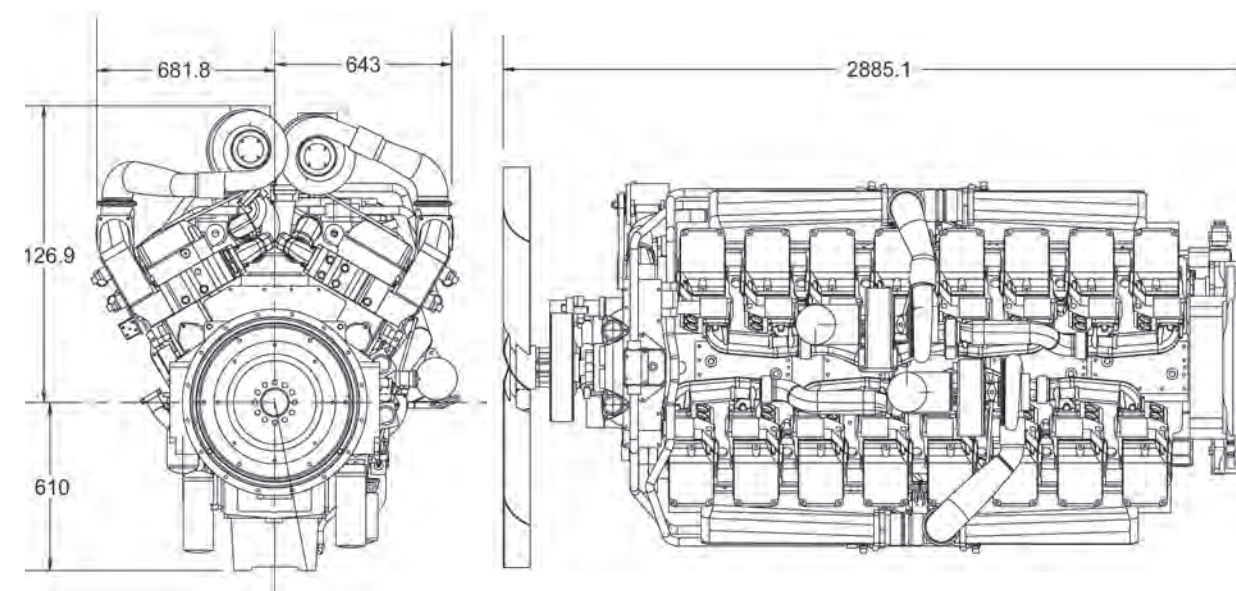
发动机外形图

Installation Diagram

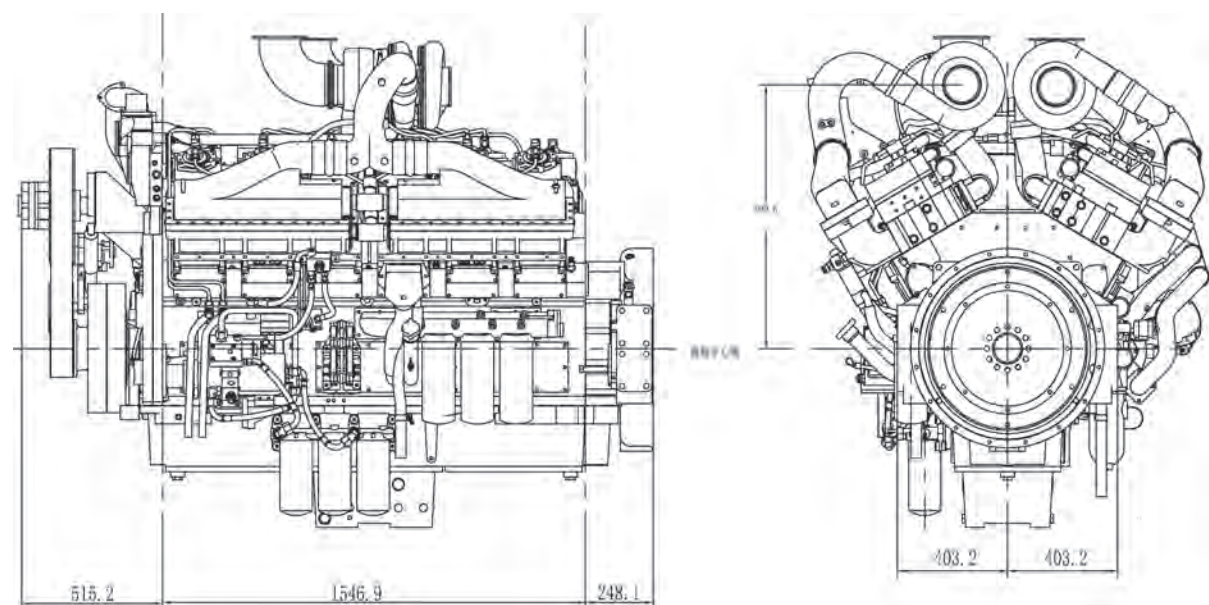
K38



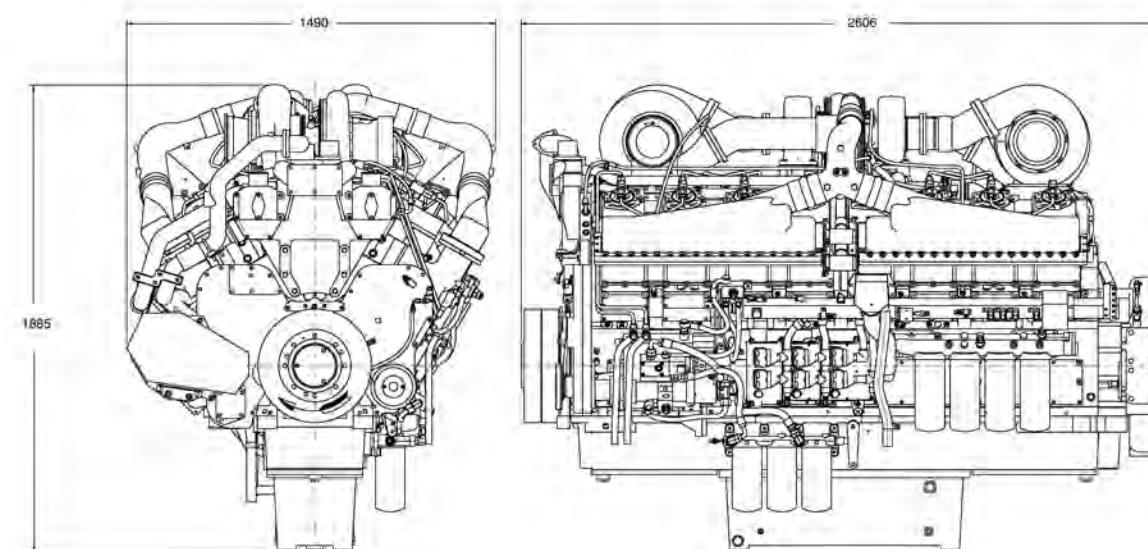
K50



QSK38



QSK50



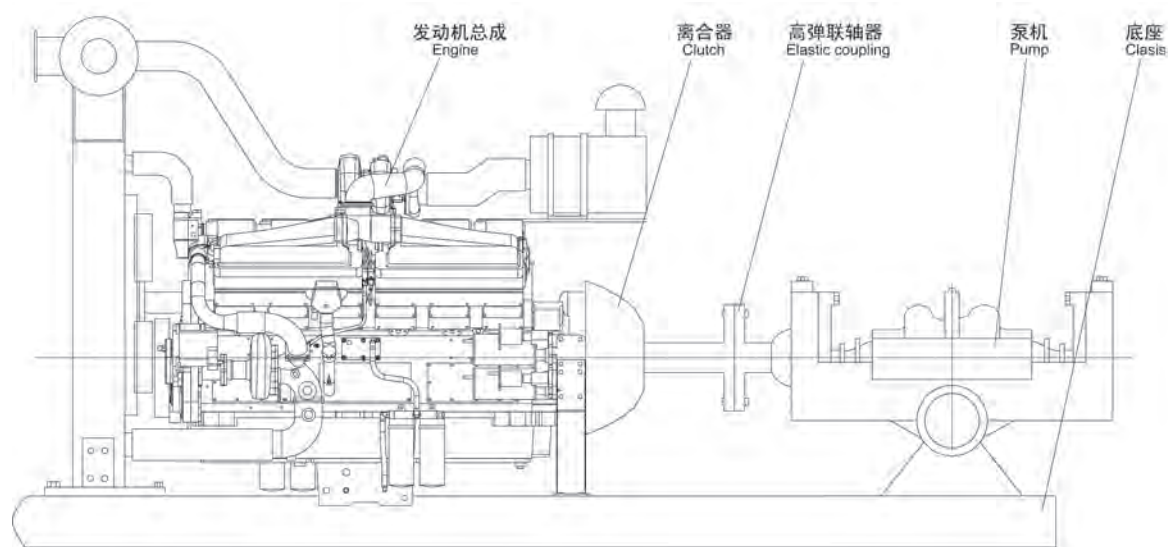
典型应用

Typical Application

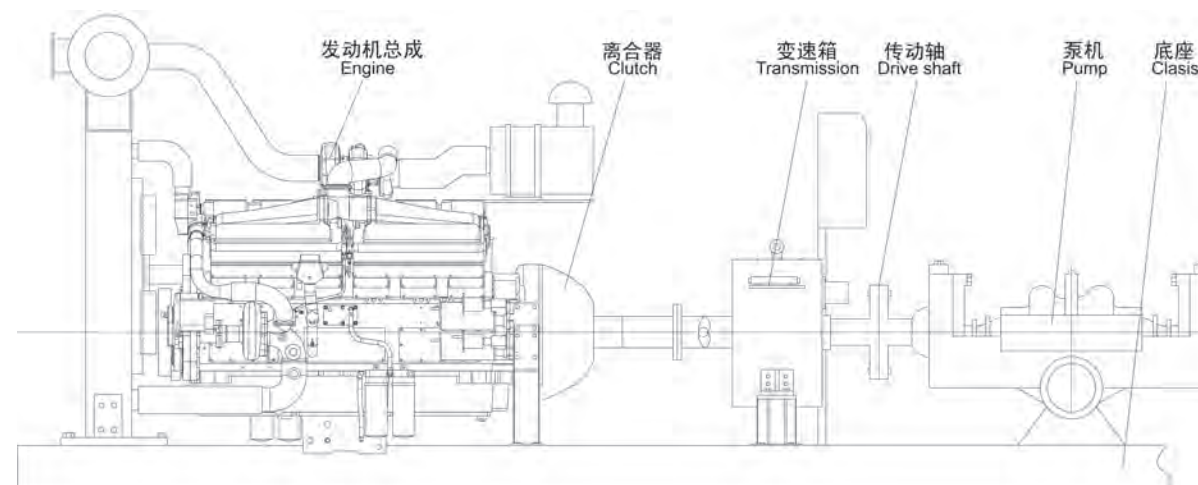
典型应用

Typical Application

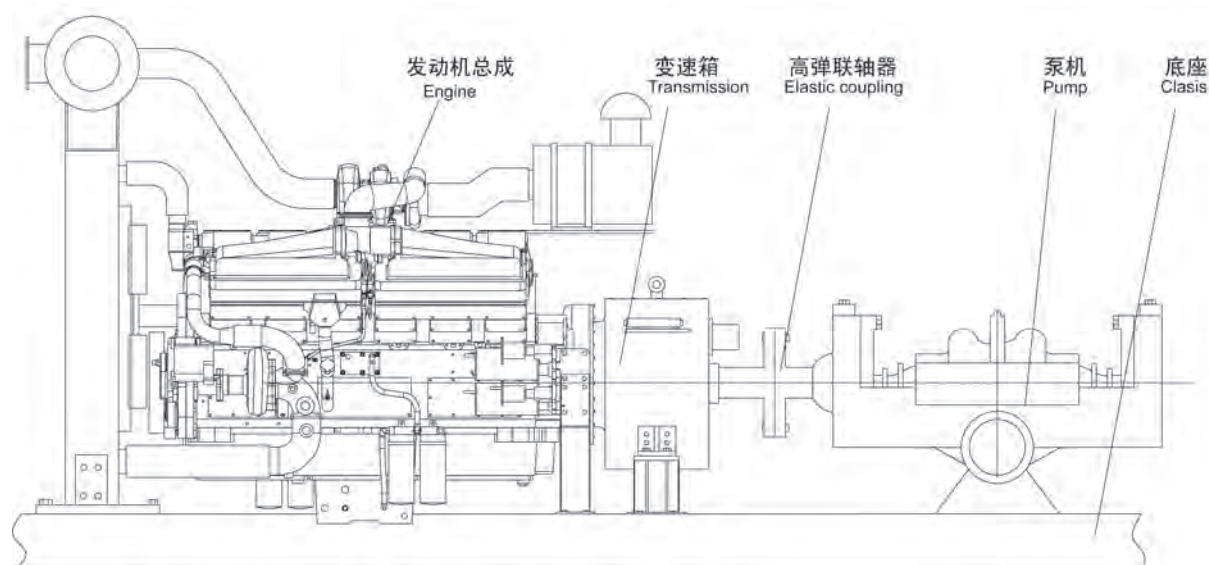
泥浆泵 Mud Pump



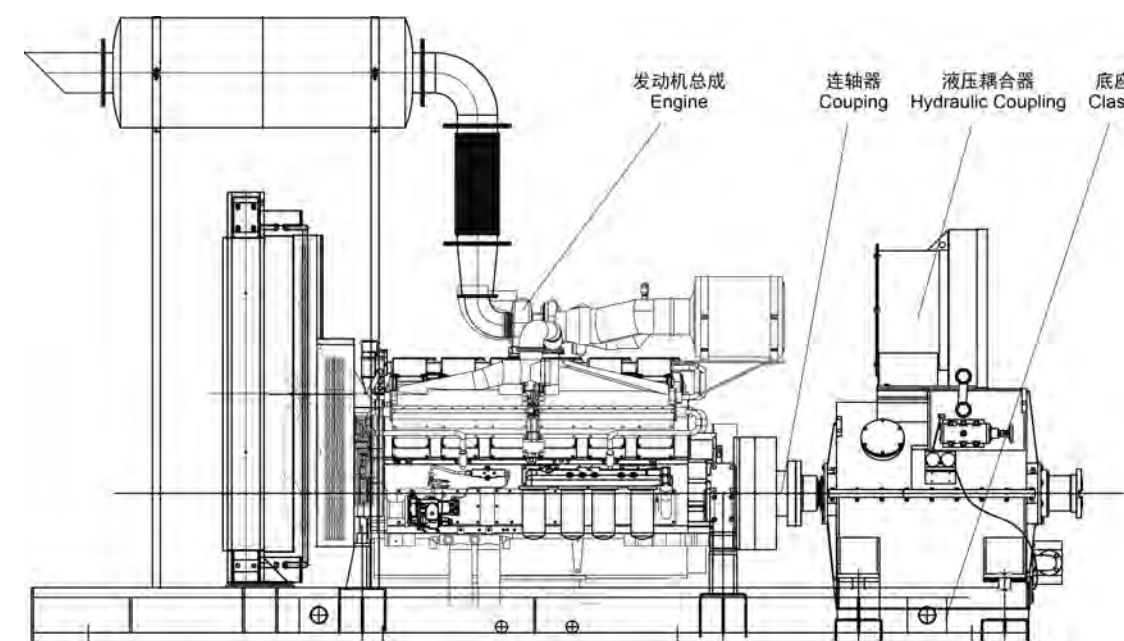
单机 / 双机水泥固井机 Single/Double well fixing Machine



压裂车 Fracturing Truck



钻井机 Drilling



备注：发动机由重庆康明斯提供，附件可根据重庆康明斯推荐选型，并在重庆康明斯指导下安装，且必须符合重庆康明斯安装建议要求。

Notes: The engines are provided by CCEC. For other accessory parts, the type could be selected based on the recommendation of CCEC and the installation should be directed under the guidance of CCEC. The installation should conform to the suggested installation requirements of CCEC.

保修服务

WARRANTY

康明斯发动机保修条件更为优越，保修时间分为基础保修和延长的重要零部件保修两部分。详细的保修条例根据发动机实际应用会有所不同，请咨询你身边的康明斯专家或查询重庆康明斯保修服务公告 3381322-10/04,3381278-09/02,3381080-01/03,3381307-10/04,3381775-07/02。

重庆康明斯的服务体系

实施与全球康明斯标准一致的质量保障和保修承诺。

按照全球康明斯标准建立的快速服务体系实施维修服务；建立 24 小时用户服务热线，具有健全的全国服务网络，全国近 100 家特约经销商，600 多名经过专业培训的服务技师，从事专业维修服务工作，拥有功能齐全的康明斯东亚地区大功率发动机技术培训中心。

重庆康明斯与康明斯（中国）投资有限公司签署有全球范围产品保修服务支持协议，对于重庆康明斯所有出口产品（包括随主机厂设备出口的发动机），康明斯全球各地服务网络将提供保修服务支持。

重庆康明斯服务承诺

- 30 分钟内对用户的服务要求作出回应
- 8 小时到达用户现场
- 24 小时完成一般故障修复
- 72 小时完成所有故障修复



康明斯在线服务

在线快速服务（<http://quickserve.cummins.com>）提供更便捷的零件和服务信息。超过 800 万的发动机零件号被储存在康明斯在线快速服务数据库中，仅需使用康明斯高速查询引擎和发动机序列号就能在几秒钟之内查询到你需要的信息。



全天候的支持

服务网络 — 康明斯发动机拥有全世界超过 5500 家经销商的强大服务网络。
重庆康明斯咨询和服务热线
+86-4008899990
重庆康明斯海外服务咨询 023-65335888-3267

保修服务

WARRANTY

Cummins engines are provided with an excellent warranty service. The warranty period consists of base warranty and extended warranty for key parts. For the detailed warranty regulations, they may vary based on the actual engine application. Please consult your nearby Cummins Expert or inquiry the warranty service bulletin of Chongqing Cummins 3381322-10/04,3381278-09/02,3381080-01/03,3381307-10/04,3381775-07/02.

Service System

Carry out the same quality assurance and warranty commitment standards as Cummins. Set up quick service system according to Cummins

Global standards; 24hours customer hotline, National service network, about 100 Authorized Service Dealers, more than 600 specialized technicians providing professional engine service, have Heavy Duty and High Horse Power engine technical training center in Cummins East Asia.

Chongqing Cummins and Cummins (China) Investment Co., Ltd have agreement on warranty service support in global area. Cummins Global service network provide warranty service for Chongqing Cummins exported engines (Including Chongqing Cummins Engines equipped in OEM exported machines).

Chongqing Cummins Quick Service Commitment

- Respond customer service requirement within 30 minutes
- Arrive customer site within 8 hours
- Complete minor repair within 24 hours
- Complete major repair within 72 hours

QuickServe Online

QuickServe On-line (<http://quickserve.cummins.com>) may provide you with an easy access to the parts and service information. More than 8 million kinds of engine part numbers are stored in Cummins QuickServe database. Just by using Cummins High Speed Inquiry Engine and engine ESN, you can get what you needed within several seconds.



Every Question, Answered

Service network—Cummins owns a powerful service network with more than 5500 distributors around the world.

CCEC Hotline — +86-4008899990

CCEC Overseas Service Inquiry:
023-65335888-3267