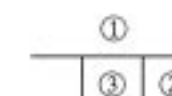


## 190 系列外混式燃气发动机及发电机组 Series 190 outer mixing gas engines and gensets

济柴190系列外混式发动机是在我公司190柴油机的基础上自行研制开发的济柴第一代气体燃料发动机，填补了我国增压大功率天然气发动机的空白，主要指标达到八十年代国际先进水平。经过多年来的不断改进，产品形成系列化，广泛应用于各大油田及燃气充足的场合，产生了巨大的经济效益。

Series 190 outer mixing gas engine is the first generation of gas engine developed by our company based on the 190 diesel engine. It fills up the gap of turbocharged high-power gas engine in China, and the main targets reach the world advanced level of 1980s. After continual improvement for years, the 190 gas engines have formed a series which are widely used in oil fields and other places with rich fuel gas, bringing tremendous economic benefits.



- ① 12V190 系列燃气发电机组  
Series 12V190 gas gensets
- ② 直列 190 系列燃气发电机组  
Series 190L gas gensets
- ③ 12V190 系列燃气发动机  
Series 12V190 gas engines

**JDEC**



燃气发电机组主要技术规格 Main specification for gas gensets

| 机组型号<br>Model of genset                                                                        | 发动机型号<br>Model of engine             | 额定功率<br>Rated power (kW/kVA) | 额定电压<br>Rated voltage (V) | 额定频率<br>Rated frequency (Hz) | 外形尺寸<br>Overall dimension L × B × H(mm) | 净质量<br>Net weigh (kg) | 燃料<br>Fuel      |
|------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------|---------------------------|------------------------------|-----------------------------------------|-----------------------|-----------------|
| 75GFZ-T                                                                                        | 4190T <sub>I</sub> -2                | 75/93.75                     | 400/230                   | 50                           | 3766 × 1560 × 1737                      | 5300                  | 天然气 Natural gas |
| 125GFZ-T                                                                                       | 4190Z <sub>L</sub> T <sub>I</sub> -2 | 125/156.25                   | 400/230                   | 50                           | 4106 × 1900 × 1896                      | 7500                  | 天然气 Natural gas |
| 210GFZ-T                                                                                       | 6190Z <sub>L</sub> T-2               | 210/262.5                    | 400/230                   | 50                           | 5105 × 2006 × 2110                      | 8690                  | 天然气 Natural gas |
| 250GF-TK                                                                                       | 6190Z <sub>L</sub> T-2               | 250/312.5                    | 400/230                   | 50                           | 4935 × 1760 × 2441                      | 8690                  | 天然气 Natural gas |
| 400GF-NK                                                                                       | 12V190Z-2                            | 400/500                      | 400/230                   | 50                           | 5120 × 2200 × 2312                      | 11300                 | 沼气 Biogas       |
| 400GF-T                                                                                        | 12V190DT <sub>2</sub> -2             | 400/500                      | 400/230                   | 50                           | 6470 × 2110 × 2195                      | 11800                 | 天然气 Natural gas |
| 400GF-TK                                                                                       | 12V190DT <sub>2</sub> -2             | 400/500                      | 400/230                   | 50                           | 4566 × 2040 × 2195                      | 11300                 | 天然气 Natural gas |
| 450GF1-NK                                                                                      | 12V190Z <sub>L</sub> DZ-2            | 450/562.5                    | 400/230                   | 50                           | 5120 × 2200 × 2312                      | 11300                 | 沼气 Biogas       |
| 500GF18-TK                                                                                     | 12V190ZDT-2                          | 500/625                      | 400/230                   | 50                           | 4566 × 2040 × 2780                      | 11800                 | 天然气 Natural gas |
| 启动方式 Starting mode:24V 直流电启动 24VDC electric starting<br>操纵方式 Control mode:自控或电控 Auto or manual |                                      |                              |                           |                              |                                         |                       |                 |

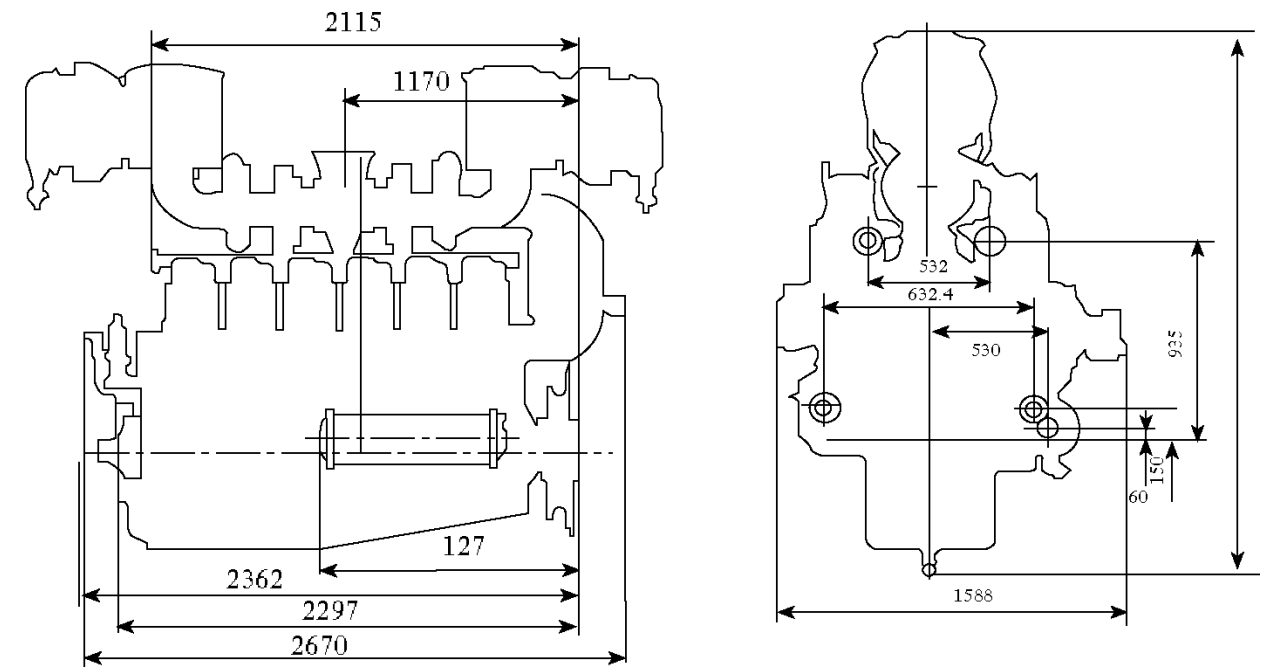
燃气发动机主要技术规格 Main specification for gas engines

| 型号<br>Model                          | 额定功率<br>Rated power (kW) | 额定转速<br>Rated speed (r/min) | 压缩比<br>Compression ratio | 缸数及排列<br>No.and laout of cylinders | 外形尺寸<br>Overall dimension L × B × H(mm) | 净质量<br>Net weigh (kg) | 燃料<br>Fuel      |
|--------------------------------------|--------------------------|-----------------------------|--------------------------|------------------------------------|-----------------------------------------|-----------------------|-----------------|
| 4190T <sub>I</sub> -2                | 110                      | 1000                        | 9:1                      | 4 缸直列 4 in-line                    | 2405 × 1442 × 1645                      | 3000                  | 天然气 Natural gas |
| 4190Z <sub>L</sub> T <sub>I</sub> -2 | 165                      | 1000                        | 10:1                     | 4 缸直列 4 in-line                    | 3560 × 1525 × 1730                      | 3000                  | 沼气 Biogas       |
| 6190Z <sub>L</sub> T-2               | 270                      | 1000                        | 8:1                      | 6 缸直列 6 in-line                    | 2990 × 1725 × 1801                      | 3960                  | 天然气 Natural gas |
| 12V190DT <sub>2</sub> -2             | 450                      | 1000                        | 9:1                      | 12,60° Vee                         | 2670 × 1588 × 1898                      | 5300                  | 天然气 Natural gas |
| 12V190Z <sub>L</sub> DZ-2            | 500                      | 1000                        | 8:1                      | 12,60° Vee                         | 2670 × 1588 × 2072                      | 5300                  | 沼气 Biogas       |
| 12V190Z <sub>L</sub> DM-2            | 500                      | 1000                        | 8:1                      | 12,60° Vee                         | 2670 × 1588 × 2072                      | 5300                  | 煤气 Coal gas     |
| 12V190Z-2                            | 500                      | 1000                        | 9:1                      | 12,60° Vee                         | 2670 × 1588 × 1898                      | 5300                  | 沼气 Biogas       |
| 12V190ZDT-2                          | 550                      | 1000                        | 8:1                      | 12,60° Vee                         | 2670 × 1588 × 2538                      | 5300                  | 天然气 Natural gas |

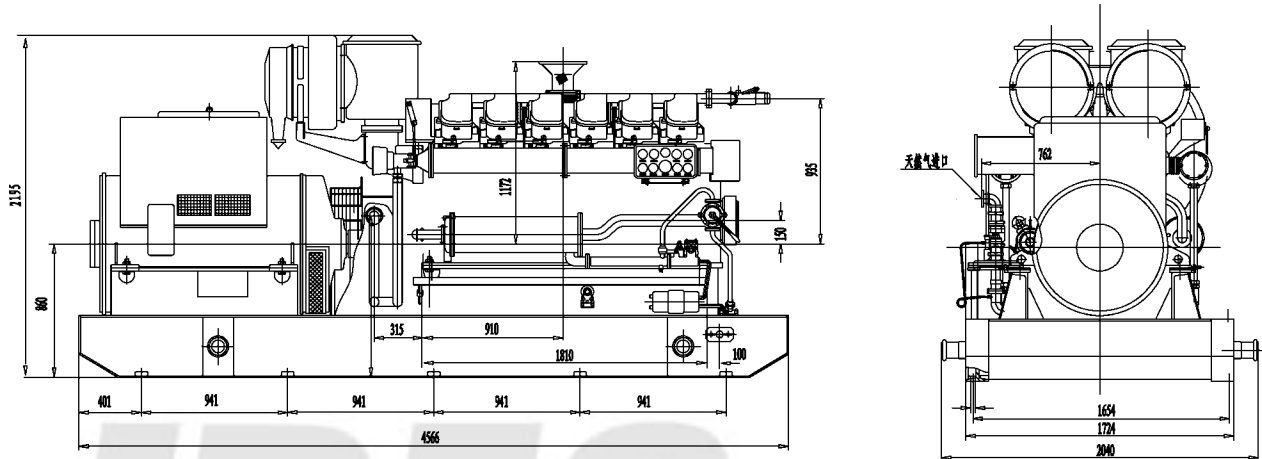
主要技术参数 Main technical data

|                               |                                                                                                 |
|-------------------------------|-------------------------------------------------------------------------------------------------|
| 型 式: 四冲程、水冷、增压中冷、火花塞点火、<br>外混 | Type:Four stroke,water cooled,turbocharged and aftercooled,<br>spark plug ignition,outer mixing |
| 气 缸 直 径: 190mm                | Bore:190mm                                                                                      |
| 活 塞 行 程: 210mm                | Stroke:210mm                                                                                    |
| 转 向: 逆时针 (面向输出端)              | Direction of rotation:Counter-clockwise(facing to flywheel)                                     |
| 启 动 方 式: 电马达                  | Starting method:electric motor                                                                  |
| 润 滑 方 式: 压力和飞溅润滑              | Lubricating method:Pressure and splash lubrication                                              |
| 热 消 耗 率: ≤11386kJ/kW·h        | Specific heat consumption:≤ 11386kJ/kW·h                                                        |
| 机 油 消 耗 率: ≤1.63g/kW·h        | Specific oil consumption:≤ 1.63g/kW·h                                                           |
| 稳 定 调 速 率: 0 ~ 5 %可调          | Stable speed regulating rate:0~5% adjustable                                                    |

外形尺寸 Overall dimension



12V190ZDT-2



400GF-TK

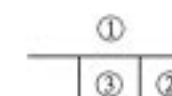
## 190 系列闭环电控燃气发动机及发电机组 Series 190 closed-loop electronic control gas engines and gensets

190 系列闭环电控燃气发动机是我公司与美国 WOODWARD 公司合作，采用国际上比较先进的燃气外部混合的方式，运用先进的电控技术和稀薄燃烧控制策略，开发的一种增压器前混合的燃气发动机。该系列燃气发动机的动力性、经济性、可靠性均达到国际先进水平。

本系列燃气发动机以天然气、沼气、煤气、瓦斯等气体为燃料，可配套成发电机组或其它动力输出，满足不同用户的不同要求。

Series 190 closed-loop electronic control gas engine is developed by our company with the cooperation of American WOODWARD. It is the engine that mixes air and fuel before turbocharger. The power performance, fuel economy and reliability of this gas engine reach world advanced level by adopting world advanced outer mixing mode, electronic control technology and lean-burnt strategy.

The gas fuel of this engine series can be natural gas, biogas, coal gas, coal mine gas, and etc. In order to meet the requirements of different customers, this gas engine can be packaged into generating set or other power take-off.



- ① 190 系列闭环电控开式燃气发电机组  
Series 190 closed-loop electronic control open type gas gensets
- ② 190 系列闭环电控闭式燃气发电机组  
Series 190 closed-loop electronic control closed type gas gensets
- ③ 190 系列闭环电控燃气发动机  
Series 190 closed-loop electronic control gas engines

燃气发电机组主要技术规格 Main specification for gas gensets

| 机组型号<br>Model of generator                                                                     | 发动机型号<br>Model of engine                 | 额定功率<br>Rated power (kW/kVA) | 额定电压<br>Rated voltage (V) | 额定频率<br>Rated frequency (Hz) | 外形尺寸<br>Overall dimension L × B × H(mm) | 净质量<br>Net weigh (kg) | 燃料<br>Fuel       |
|------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------|---------------------------|------------------------------|-----------------------------------------|-----------------------|------------------|
| 500GF-T1                                                                                       | G12V190Z <sub>L</sub> DT <sub>1</sub> -2 | 500/625                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 天然气 Natural gas  |
| 500GF-TK1                                                                                      | G12V190Z <sub>L</sub> DT-2               | 500/625                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 天然气 Natural gas  |
| 500GF-NK                                                                                       | G12V190Z <sub>L</sub> DZ-2               | 500/625                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 沼气 Biogas        |
| 500GF-WK                                                                                       | G12V190Z <sub>L</sub> DW-2               | 500/625                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 瓦斯 Coal mine gas |
| 500GF-WK1                                                                                      | G12V190Z <sub>L</sub> WD-2               | 500/625                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 瓦斯 Coal mine gas |
| 700GF-T1                                                                                       | G12V190Z <sub>L</sub> DT <sub>1</sub>    | 700/875                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 天然气 Natural gas  |
| 700GF-TK1                                                                                      | G12V190Z <sub>L</sub> DT                 | 700/875                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 天然气 Natural gas  |
| 700GF-NK                                                                                       | G12V190Z <sub>L</sub> DZ                 | 700/875                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 沼气 Biogas        |
| 700GF-WK                                                                                       | G12V190Z <sub>L</sub> DW                 | 700/875                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 瓦斯 Coal mine gas |
| 700GF-WK1                                                                                      | G12V190Z <sub>L</sub> WD                 | 700/875                      | 400/230                   | 50                           | 5120 × 2040 × 2776.5                    | 11800                 | 瓦斯 Coal mine gas |
| 启动方式 Starting mode:24V 直流电启动 24VDC electric starting<br>操纵方式 Control mode:自控或电控 Auto or manual |                                          |                              |                           |                              |                                         |                       |                  |

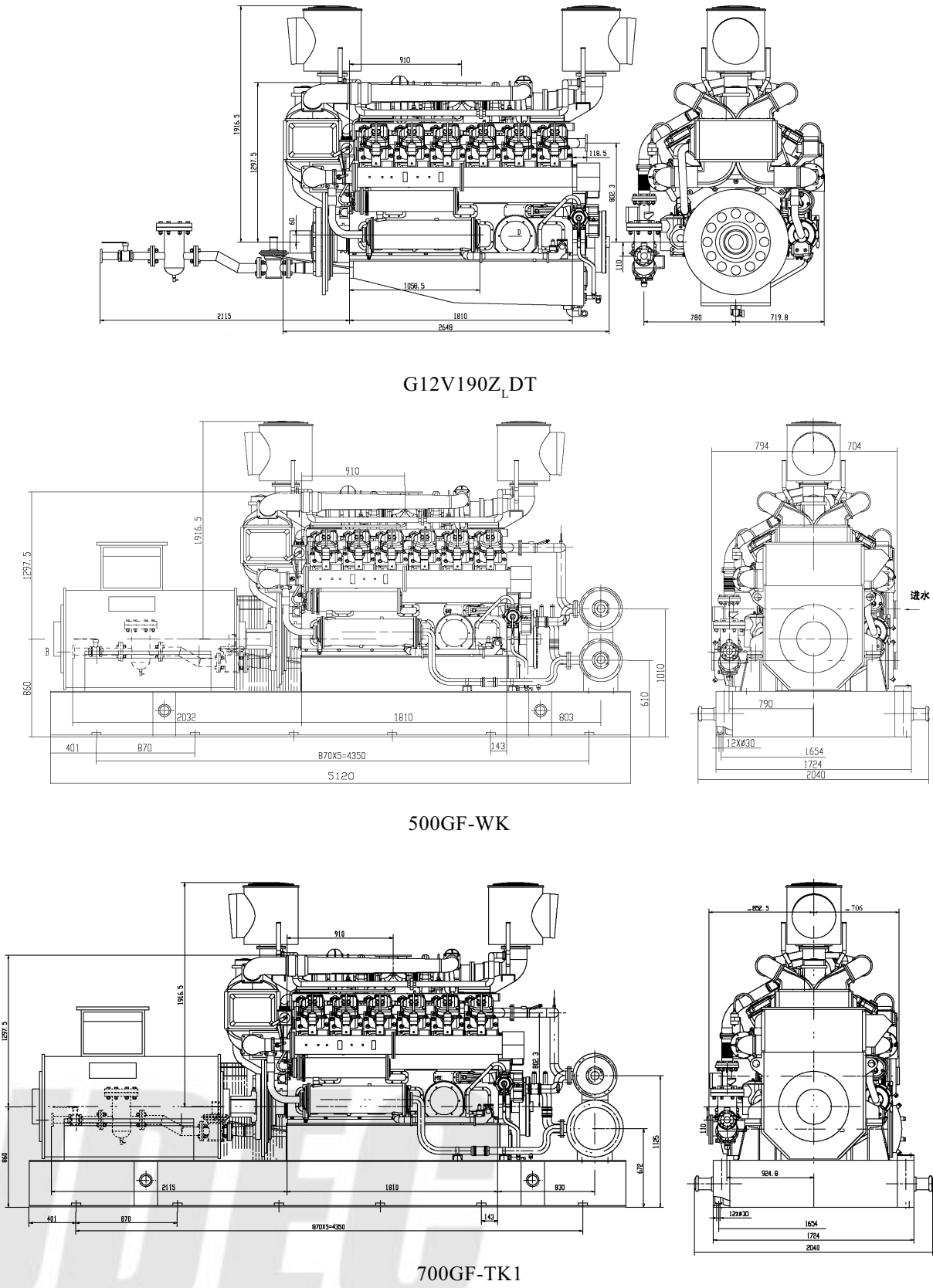
燃气发动机主要技术规格 Main specification for gas engines

| 型号<br>Model                              | 额定功率<br>Rated power (kW) | 额定转速<br>Rated speed (r/min) | 压缩比<br>Compression ratio | 缸数及排列<br>No.and laout of cylinders | 外形尺寸<br>Overall dimension L × B × H(mm) | 净质量<br>Net weigh (kg) | 燃料<br>Fuel       |
|------------------------------------------|--------------------------|-----------------------------|--------------------------|------------------------------------|-----------------------------------------|-----------------------|------------------|
| G12V190Z <sub>L</sub> DT                 | 800                      | 1500                        | 12:1                     | 12,60° Vee                         | 2817 × 1645 × 2536.5                    | 5300                  | 天然气 Natural gas  |
| G12V190Z <sub>L</sub> DT <sub>1</sub>    | 800                      | 1500                        | 12:1                     | 12,60° Vee                         | 2817 × 1645 × 2536.5                    | 5300                  | 天然气 Natural gas  |
| G12V190Z <sub>L</sub> DT-2               | 550                      | 1000                        | 12:1                     | 12,60° Vee                         | 2817 × 1645 × 2536.5                    | 5300                  | 天然气 Natural gas  |
| G12V190Z <sub>L</sub> DT <sub>1</sub> -2 | 550                      | 1000                        | 12:1                     | 12,60° Vee                         | 2817 × 1645 × 2536.5                    | 5300                  | 天然气 Natural gas  |
| G12V190Z <sub>L</sub> DZ                 | 800                      | 1500                        | 12:1                     | 12,60° Vee                         | 2817 × 1645 × 2536.5                    | 5300                  | 沼气 Biogas        |
| G12V190Z <sub>L</sub> DZ-2               | 550                      | 1000                        | 12:1                     | 12,60° Vee                         | 2817 × 1645 × 2536.5                    | 5300                  | 沼气 Biogas        |
| G12V190Z <sub>L</sub> DW                 | 800                      | 1500                        | 12:1                     | 12,60° Vee                         | 2817 × 1645 × 2536.5                    | 5300                  | 瓦斯 Coal mine gas |
| G12V190Z <sub>L</sub> DW-2               | 550                      | 1000                        | 12:1                     | 12,60° Vee                         | 2817 × 1645 × 2536.5                    | 5300                  | 瓦斯 Coal mine gas |

主要技术参数 Main technical data

|                           |                                                                                              |
|---------------------------|----------------------------------------------------------------------------------------------|
| 型 式: 四冲程、水冷、增压中冷、火花塞点火、外混 | Type:Four stroke,water cooled,turbocharged and aftercooled, spark plug ignition,outer mixing |
| 气 缸 直 径: 190mm            | Bore:190mm                                                                                   |
| 活 塞 行 程: 210mm            | Stroke:210mm                                                                                 |
| 转 向: 逆时针（面向输出端）           | Direction of rotation:Counter-clockwise(facing to flywheel)                                  |
| 启 动 方 式: 电马达              | Starting method:electric motor                                                               |
| 润 滑 方 式: 压力和飞溅润滑          | Lubricating method:Pressure and splash lubrication                                           |
| 热 消 耗 率: ≤11000kJ/kW·h    | Specific heat consumption:≤ 11000kJ/kW·h                                                     |
| 机 油 消 耗 率: ≤1.6g/kW·h     | Specific oil consumption:≤ 1.6g/kW·h                                                         |
| 稳 定 调 速 率: 0 ~ 5 %可调      | Stable speed regulating rate:0~5% adjustable                                                 |

外形尺寸 Overall dimension



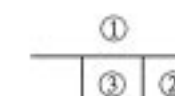
## 3000/6000 系列燃气发动机及发电机组 Series 3000/6000 gas engines and gensets

目前我国燃气发动机的功率范围主要集中在 200kW 至 800kW 之间，800kW 特别是 1000kW 以上的燃气发动机几乎全部依赖于进口，并且市场需求很大。3000/6000 系列燃气发动机是我公司针对这种情况自主研发开发的大功率燃气发动机。目前该系列燃气发动机功率可达到 1500kW，下一步公司的 16V 燃气发动机功率可达到 2000kW，完全可以替代进口大功率燃气机，且价格明显低于进口产品。

该系列燃气发动机动力性、经济性、可靠性和安全性均有大幅度的提高，其主要性能指标达到了国际先进水平，可配套成燃气发电机组和压缩机机组，满足城市、井场供电及压缩机等市场的需求。

Nowadays the power range of gas engine in China is mainly between 200kW and 800kW. Gas engine above 800kW, especially above 1000kW, which is almost depending on import, are in urgent demand in the market. In this situation, our company develops series 3000/6000 high-power gas engine to meet the requirement. At present, the power of this series can reach 1500kW, and in the future the power of 16V gas engine can reach 2000kW, which can replace the import high-power gas engine with a totally competitive price.

The power performance, fuel economy, reliability and safeness of this series are improved a lot, and the main performance targets reach world advanced level. It can be packaged into generating set to meet the power supply requirements of city and well field, or compressor set to meet the requirement of compressor market.



- ① 3000 系列外混式燃气发电机组  
Series 3000 outer mixing gas gensets
- ② 3000 系列内混式燃气发动机  
Series 3000 inner mixing gas engines
- ③ 6000 系列燃气发动机  
Series 6000 gas engines

**JDEC**



## 外形尺寸 Overall dimension

AD12V190Z<sub>L</sub>T<sub>2</sub>H12V190Z<sub>L</sub>T

1000GF-TK2

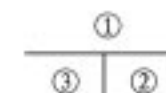
## 双燃料发动机及发电机组 Dual fuel engines and gensets

双燃料发动机是我公司为实现油田钻井“以气代油”，降低钻井成本，提高经济效益，而开发的新型的柴油与天然气并用的发动机。该发动机具有双燃料和纯柴油两种工作模式，两种工作模式可方便切换，经济性好，性能优良，动态响应性能好，工作可靠，使用寿命长，操作维护方便，还具有超温和爆震保护等功能。

该发动机可配套发电机组和变矩器机组等，作为石油钻井的动力装备，也可由两台或两台以上的发电机组组成电站，作为工厂、矿山和资源开发基地等部门的常用或备用电源。

Dual fuel engine is a new production developed by our company to meet the requirements of cutting cost, improving economic benefit and “Gas Substitutes Oil” strategy for oil field. This diesel/gas engine has two work modes, mixture fuel (diesel oil and natural gas) mode and pure diesel fuel mode, which can be interchanged easily. It has the advantages of good fuel economy, good performance, good dynamic response, reliable work, long service life, convenient operation and maintenance, and safe protection for over temperature and knocking.

This engine can be packaged into generating set, torque converter set, etc. as power facilities for drilling well. Two or more generating sets can form a power station as normal or standby power supply for factory, mine, resource development base, and etc.



- ① 2000 系列双燃料发动机  
Series 2000 dual fuel engines
- ② 2000 系列双燃料发电机组  
Series 2000 dual fuel gensets
- ③ 3000 系列双燃料发电机组  
Series 3000 dual fuel gensets

## 外形尺寸 Overall dimension

**800GF-S**

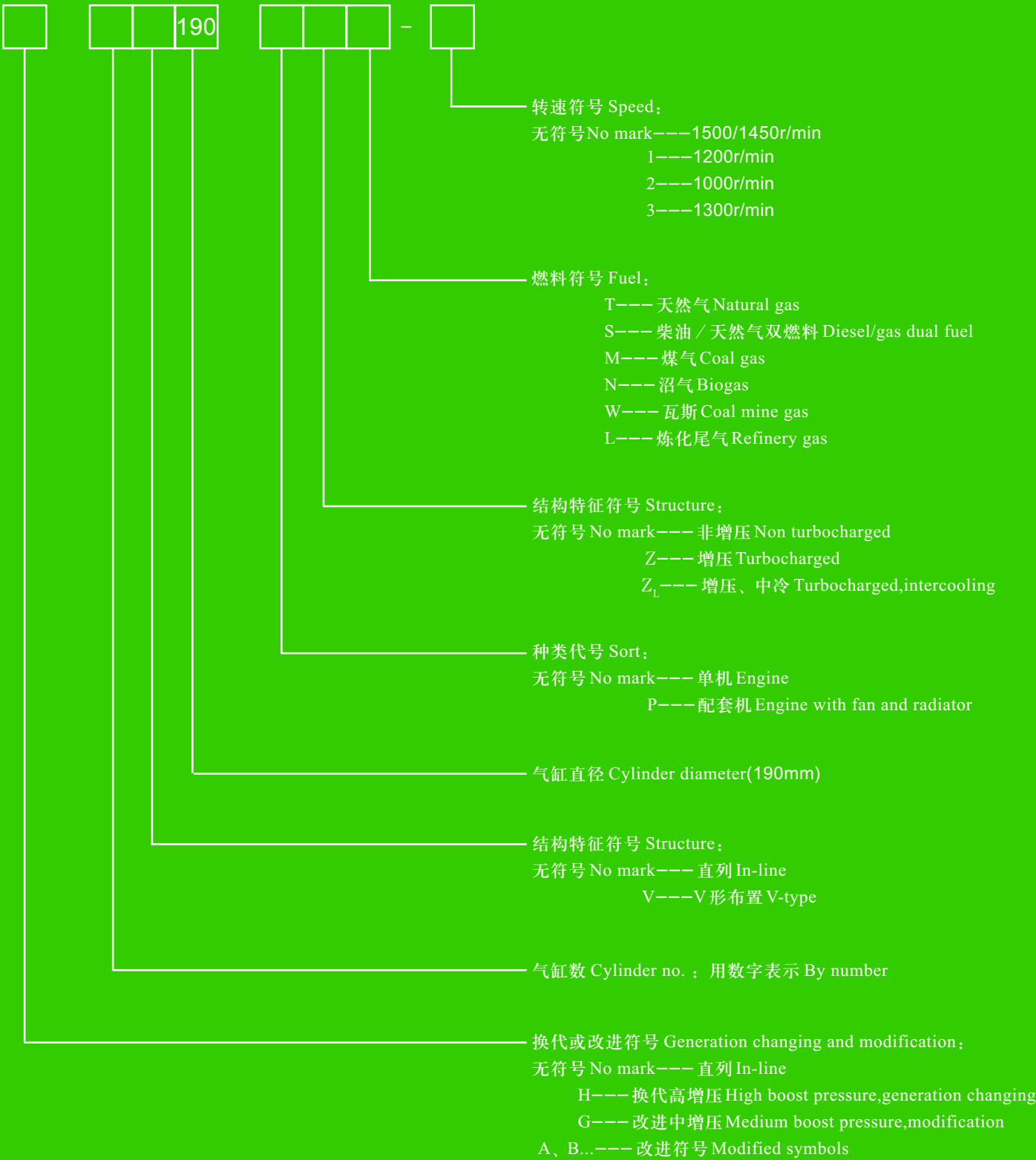
| 型号<br>Model                | 额定功率<br>Rated power<br>(kW) | 额定转速<br>Rated speed<br>(r/min) | 压缩比<br>Compression<br>ratio | 热消耗率<br>Specific heat<br>consumption<br>(kJ/kW·h) | 机油消耗率<br>Specific oil<br>consumption<br>(g/kW·h) | 外形尺寸<br>Overall dimension<br>L × B × H(mm) | 净质量<br>Net weigh<br>(kg) | 燃料<br>Fuel             |
|----------------------------|-----------------------------|--------------------------------|-----------------------------|---------------------------------------------------|--------------------------------------------------|--------------------------------------------|--------------------------|------------------------|
| A12V190Z <sub>L</sub> S    | 1100                        | 1500                           | 14.5:1                      | ≤ 10300                                           | ≤ 1.0                                            | 2950 × 1980 × 2206                         | 10300                    | 柴油 / 天然气<br>Diesel/Gas |
| G12V190Z <sub>L</sub> S    | 870                         | 1500                           | 14:1                        | ≤ 11000                                           | ≤ 1.6                                            | 3055.5 × 1745 × 2422                       | 5300                     | 柴油 / 天然气<br>Diesel/Gas |
| G12V190PZ <sub>L</sub> S   | 870                         | 1500                           | 14:1                        | ≤ 11000                                           | ≤ 1.6                                            | 4125 × 2130 × 2577                         | 8100                     | 柴油 / 天然气<br>Diesel/Gas |
| G12V190Z <sub>L</sub> S-3  | 755                         | 1300                           | 14:1                        | ≤ 11000                                           | ≤ 1.6                                            | 3055.5 × 1745 × 2422                       | 5300                     | 柴油 / 天然气<br>Diesel/Gas |
| G12V190PZ <sub>L</sub> S-3 | 755                         | 1300                           | 14:1                        | ≤ 11000                                           | ≤ 1.6                                            | 4125 × 2130 × 2577                         | 8100                     | 柴油 / 天然气<br>Diesel/Gas |

## 主要技术参数 Main technical data

|                    |                                                             |
|--------------------|-------------------------------------------------------------|
| 缸数及排列: 12缸, 60° V型 | No. and layout of cylinders:12,60° Vee                      |
| 型 式: 四冲程、水冷、增压中冷   | Type:Four stroke,water cooled,turbocharged and aftercooled  |
| 气 缸 直 径: 190mm     | Bore:190mm                                                  |
| 活 塞 行 程: 210/215mm | Stroke:210/215mm                                            |
| 转 向: 逆时针 (面向输出端)   | Direction of rotation:Counter-clockwise(facing to flywheel) |
| 启 动 方 式: 电马达       | Starting method:electric motor                              |
| 润 滑 方 式: 压力和飞溅润滑   | Lubricating method:Pressure and splash lubrication          |
| 稳定调速率: 0 ~ 5 %可调   | Stable speed regulating rate:0 ~ 5% adjustable              |

型号说明 Type designation

1、燃气发动机 Gas engines



2、燃气发电机组 Gas gensets

