尿素喷射阀 Adblue Dosing Valve

◉ 基本功能和应用场景/Basic functions and application scenarios

尿素喷嘴是 SCR 系统中的关键组件之一，用于将尿素溶液喷入汽车尾气中，与氮氧化合物反应，并将其减少为氮和水。尿素喷嘴的主要作用是确保尿素喷雾的均匀和有效，并控制减排系统的效率。

尿素喷嘴广泛应用于重型柴油车和轻型商用车等车辆上，是减少尾气排放的重要组成部分。

Adblue dosing valve is one of the key components in the SCR system. It is used to inject urea solution into the vehicle exhaust to react with nitrogen oxides and reduce them to nitrogen and water. The main function is to ensure uniform and effective urea spray and control the efficiency of the emission reduction system.
Adblue dosing valve is widely used in vehicles such as heavy-duty diesel vehicles and light commercial vehicles, which is an important part of reducing exhaust emissions.

◉ 喷射阀结构/Structure

◉ 喷射阀介绍/Introduction

✧ 设计 The design

1. 具有脉宽调制功能的电磁阀 Solenoid valve with pulse width modulation
2. 液/电分离设计能保护电子器件 Liquid/electrical separation design protects electronic devices
3. 喷射阀内安装压力传感器 There is pressure sensor in injection valve
4. 进口安装滤网防止碎片进入 Install a filter at the entrance to prevent debris from entering

✧ 功能 Function

1. 使尿素雾化后喷入混合器 Atomize urea and spray it into the mixer
2. 在关机时使系统减压 Depressurize the system at shutdown
3. 进口滤芯过滤尿素杂质 The filter element at the inlet filters urea impurities

✧ 解冻 Thaw

1. 打洞机排气解冻喷射阀 Hole punching machine exhaust defrosting injection valve
2. 直接通过金属结构热传导溶解泵内尿素 Dissolve the urea in the pump directly through the heat conduction of the metal structure

✧ 冷却 Cooling

尿素液循环冷却喷射阀 Urea liquid circulation cooling injection valve

◉ 尿素喷射工作阶段/Urea injection working phase

预注阶段 pre-injection stage

- ✧ 待机阶段 standby stage
- ✧ 预注 pre-injection
- ✧ 建立系统压力 Establish system pressure
- ✧ 打开喷嘴并排出喷射管中的空气 Open the nozzle and exhaust the air in the injection pipe
- ✧ 保持压力 Maintain pressure
- ✧ 检查喷嘴工作情况 Check the working condition of the nozzle

1. 没有停泵和泵本身的故障码
2. 后处理系统解冻完成
3. 发动机运转超过 120s 或排气温度超过 150℃(EGP In)
4. 环境温度大于以下限值-30℃（带加热功能的系统）

1. There are no DTCs for stopping the pump and the pump itself
2. The post-processing system is defrosted
3. The engine runs for more than 120sor the exhaust gas temperature exceeds 150℃ (EGP In)
4. The ambient temperature is greater than the following limit -30°C (system with heating function)

喷射计量阶段 Spraying metering stage

- ✧ 满足以下条件：Meet the following conditions:

1. SCR 进、出口温度超过 180℃ SCR inlet and outlet temperatures exceed 180°C
2. 没有相关 SCR 系统的故障码现行 There is no active fault code for the relevant SCR system
3. 预注成功（DEF 压力保持 9bar，喷射单元开启关闭正常）Pre-injection is successful (DEF pressure maintains 9bar, injection unit opens and closes normally)
4. 系统解冻成功（DEF 温度高于-7℃）The system is thawed successfully (DEF temperature is higher than -7℃)
5. 满足 NOx 算法要求 Meet the requirements of NOx algorithm

*不同机型会有 20℃左右的偏差 Different models will have a deviation of about 20℃

排空阶段 Emptying phase

- ✧ 系统卸压 System pressure relief

1. 当系统出现故障时，ECM 控制 DEF 给料单元卸掉系统的压力（900Kpa 降至 30Kpa）
   When the system fails, the ECM controls the DEF feeding unit to relieve the pressure of the system (900Kpa reduced to 30Kpa)
2. 卸压后，系统直接进行排空工作 After the pressure is relieved, the system is directly emptied

- ✧ 系统排空 60s System emptying for 60s