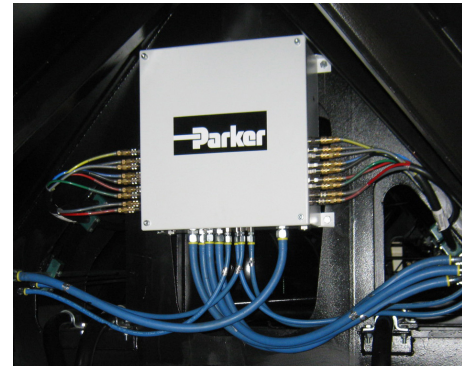


Application Profile

Discharge system for freight



Parker Hannifin delivers pneumatic safety, reliability and performance for the latest generation of freight wagons.

When it comes to the global rail industry there can be no doubt that rolling stock such as engines, carriages and freight wagons operate in some very challenging environments. From extremes of temperature to harsh working conditions, solutions utilised have to be able to cope with a wide variety of potential threats. Within the rail industry the guarantee of uptime and operational use is often the difference between maintaining profits or not.

Having gained a worldwide reputation for quality and reliability Parker Hannifin has been partnering with some of the world's leading global rail companies for over 30 years. With in-depth engineering expertise coupled with innovative integrated solutions, Parker products can be seen in every corner of the world, coping in many challenging operating environments.

Parker Hannifin have global experience of pneumatic control of wagon cargo discharge doors, working with major manufacturers of freight wagons designated as FALNS. Traditionally hopper wagon doors are controlled manually or by a variety of pneumatic components and controls. These methods are still widely deployed throughout the industry. With this in mind, Parker's rail engineers have designed an integrated solution that would go above and beyond its customer's expectations.



The real challenge for any supplier of pneumatic components is to offer solutions that add value combining operational excellence with the ability to cope with the working environment, maximizing profit potential for the customer.

Typical projects call for reliable opening of the freight hopper doors on either side of the vehicle, giving flexibility to the operator to unload from the left or right depending on the destination's configuration. This can require the wagons themselves to have two sets of controls to enable independent opening on either side. Independent operation of the doors is a critical safety requirement. Parker's solutions are also able to withstand extremes of temperature from -40C to +60C and for the control cabinets to be completely sealed against water and dust ingress.

Parker manufactures and supplies components that are ideal for deployment in the application, typically, P1D actuators, Viking Extreme in line valves, DXR ISO Valves, an integrated combination of air preparation equipment from the Global Air Preparation range and VA series heavy duty brass bodied valves.

These products are chosen not only for extreme reliability but also for the ability to cope with the environmental challenges that the rail industry demands. These are then coupled within a Parker designed and built pneumatic control cabinet and user interface panel (which controls the physical opening). Both units are sealed to prevent the ingress of dust, which can be present in coal environments and lead to equipment damage.



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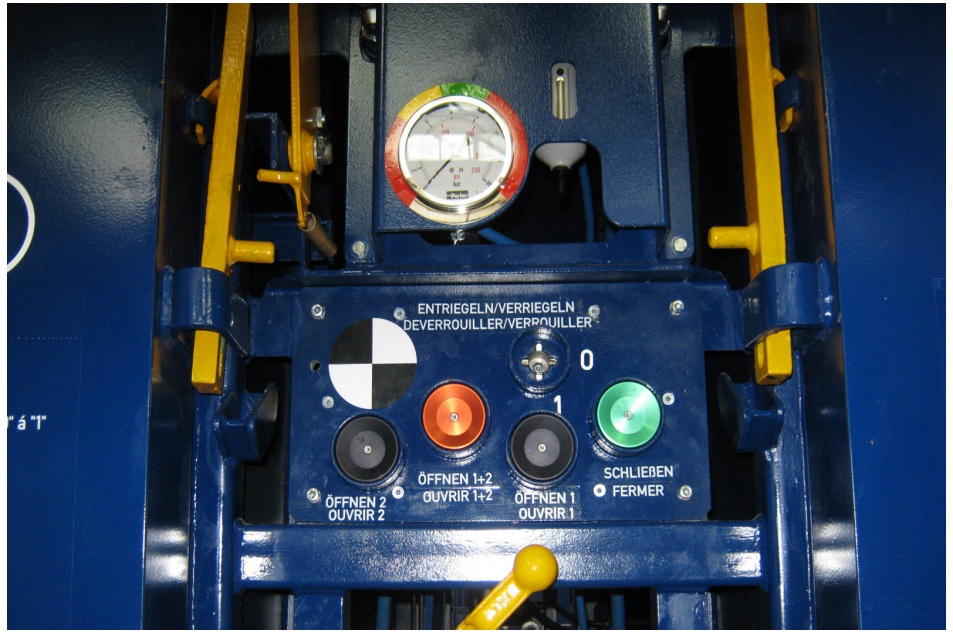
Parker's products are also thoroughly tested and meet the highest standards in term of:

- **Shock & Vibration** (IEC61373:1999 Category 1)
- **Fire standards** (EN45545-2: 2013)
- **Low/High temperatures** (EN60068-2-1, test Ad/ EN60068-2-2, test Bd)
- **Humid Climate** (BS2011: Part 2.1 Db: 1981).

It is also particularly important to have a short-term resistance to water because the wagons are sprayed with hot water spray in winter to defrost. (max water pressure of 3 bars up to +70C).

In the rail industry, air leakage across the system represents a major concern. Systems need to remain pressurised to operate the valves and cylinders effectively. Despite often being overlooked, Parker engineers are able to achieve significant leakage reductions, ensuring pressurisation and resulting in more reliable operation.

With dual sided coal hopper wagons it is very important that both sets of doors cannot be opened at the same time as this could potentially injure anyone close by. If the vehicle is to be unloaded from the right, then the operator must have a complete line of sight down the right hand side of the vehicle. The operator also needs complete peace of mind that the left hand door will not open. To solve this problem Parker engineers designed an interlock into the system. The interlock makes it impossible for doors on both sides of the wagon to be open at the same time, guaranteeing safety.



With the customer in mind, Parker knows that every solution needs to be proven before being installed on a wagon. As part of any research and development phase, solutions will undergo extreme testing to ensure they are fit for purpose. To do this, Parker engineers designed and built a complete bespoke test environment. This whole pneumatic system was then tested over 3500 cycles with a hydraulic simulated resistance, representing a mock-up field trial of around six years. The solution performed perfectly, so Parker's engineers are confident that the quality and reliability will more than meet customers' expectations.

Parker supply a complete set of equipment, ready to be installed on to the wagons. There are no individual components to install other than the external actuators; the solution is plug-and-play so the customer can benefit from reduced assembly times. Functional testing is also done on assembly reducing on vehicle test requirements and hence further time saving, resulting in quicker time to market. When it comes to support it is also important that Parker, as a supplier can offer support on a truly global scale. Parker Hannifin is present in over 48 countries around the world, which gives confidence to customers that Parker can deliver the service if required.



Global Air Preparation
Catalogue 0750-UK



Viking Xtreme Valve
Catalogue PDE2569TCUK



VA Directional Control Valves
Catalogue PDE2617TCUK



Global DX ISO Valves
Catalogue PDE2589TCUK



P1D Actuators
Catalogue PDE2667TCUK

