

Vehicle Restraint System



The PowerLock 505 NG is a vehicle restraint system that prevents premature vehicle departure or "drive-off" and "creeping" of a vehicle or trailer in order to avoid unsafe situations.

The Loading Systems vehicle restraint system locks most vehicles or trailers onto the loading bay to create an ultimately safe situation.

Materials

The 505NG Vehicle Restraint System can easily be operated and is virtually free from failures. This is achieved because we have designed a product with a limited number of moving parts. We have designed a product which restricts the number of mechanical drives to only the essential components. This also results in simple and minimum maintenance requirements.

The robust, hot-galvanised construction is designed to keep a parked vehicle locked safely in place. The design also incorporates an integrated vehicle wheel guide which ensures that the vehicle is always positioned in the centre of the loading or unloading bay. These design features ensure the loading and unloading process is a simple process and also prevents damage to the equipment and vehicle.

Due to the closed system of the 505NG, accumulation of debris underneath the system will be prevented. The system will continue to function in all weather conditions.

Operation

The 505NG Vehicle Restraint System is operated via an internal control box. The control box is equipped with clear icons and indication lights that indicate to the driver if the vehicle is restrained safely.

With pushing one button on the control box the wheel restraint is moved to the last wheel of the vehicle by a hydraulic cylinder.

From the moment that the 505NG Vehicle Restraint System is activated, it works completely autonomous. The last wheel of the vehicle is automatically detected by a sensor and the restraint arm is subsequently automatically moved in front of the wheel. After this the restraint arm is pushed against the wheel under severe pressure and the vehicle is restrained against the platform. This prevents prematurely pulling away or "crawling".

To offer the driver a clear view on the 505NG vehicle restraint system, this is often installed on the driver's side. A wheel conduction is installed on the passenger's side. All this ensures that the vehicle is always properly centred in front of the loading and unloading opening.

A 505NG vehicle restraint system is available for both left-handed as right-handed driven vehicles.

The hydraulic power unit can be installed both inside or outside, on the same side as the 505NG vehicle restraint system. The hydraulic power unit is equipped with an attachment support for wall mounting and all this is protected by a robust protection cover.

The control box of the 505NG vehicle restraint system has standard a protection class IP65 and the display on the control box provides clear information about the position of the vehicle restraint system. The control box is equipped with a function that monitors the pressure power of the restraint arm and if necessary will adjust this. The control box is installed at the driver's side. Optional the control box can be installed on the other side of the dock with a longer cable set

The traffic light outside gives the driver a clear indication if the vehicle is restrained (red light) or not restrained and can safely drive away (green light). If the dock is free and the 505NG vehicle restraint system is in neutral, the long cylinder is completely extracted and the restraint arm is retracted. The overall restraint system operated as one large wheel conduction that helps the driver to correctly position the vehicle, without any obstacles.

The 505NG vehicle restraint system is suitable to restrain vehicles or trailers to a loading and unloading opening in combination with a dock leveller load bearing capacity up to maximum 100 kN (10 tonnes).

The 505NG vehicle restraint system cannot be applied with vehicles where the last wheel is too close to the platform. This applies for trailers with steering shafts that cannot be locked.

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Standard safety provisions

The wheel lock system's movement is indicated by means of an acoustic and optic signal. 3 seconds prior to each movement the acoustic and optic signal starts. During each movement these warning signals will be maintained.

In case of emergency it is possible to immediately stop the movements of the system via the emergency stop switch on the restraint arm outside or via the service switch on the control box inside the building.

External (red/green) and internal (red/green) signal lights indicate that the vehicle is locked and restrained, and that loading and unloading process can be safely initiated.

To assist the driver, there is a reflector indication on the front and rear of the restraint system. Also it is possible to provide clear and concise signage for the vehicle driver, giving clear instructions on when it is safe for the driver to depart from the loading bay.

The 505NG Vehicle Restraint System has significant benefits in theft limitation since the vehicles can be unlocked from the inside only.

It is possible to use the 505NG without it being connected to the other products at the loading and unloading opening. In this situation it is important that the indication lights on the control box are observed carefully.

A safer situation is created by connecting the control of the 505NG vehicle restraint system with the other products at the loading and unloading opening;

- The dock leveller **cannot** be used before the vehicle is restrained.
- The vehicle **cannot** be unlocked before the dock leveller is in neutral again.

In case of a power failure the 505NG vehicle restraint system can be manually unlocked via an emergency unlocking procedure.

Standards

The 505NG Vehicle Restraint System is CE marked. The PowerLock 505NG fulfils the stipulations of the Machine Directive 2006/42/EC. The control meets the requirements of Annex I of the directive 2006/42/EC, the EMC Directive 2004/108/EC and the harmonized standards EN ISO 13849-1:2008/AC:2009 and EN 60947-5-1:2004/A1:2009

Technical Specifications

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| Standards..... | CE marking |
| Length of stroke..... | 3.250 mm |
| Net stroke | 2.800 mm |
| Stroke lateral movement | 400 mm |
| Construction height..... | 350 mm |
| Total length..... | 7.500 mm |
| Length needed in front of dock | approx. 8.500 mm |
| Time needed for locking | 30 sec. |
| Electrical capacity | 2.2 kW |
| Mains connection..... | 3x400V/50Hz/neutral and earth |
| | 3x230V/earth |
| Mains fusing..... | 3 x 16A |
| Control current | 24 V DC |
| Set-up..... | Outside (hydro-unit and control inside) |
| Degree of protection)..... | IP65 (Control box) |
| Pressure relief valve..... | 230 Bar |
| Pressure switch blocking | 50 Bar |
| Power blocking | 14kN (=1.400 kg) |
| Pressure switch releasing..... | 210 Bar |
| Power releasing | 15.5kN (=1.550 kg) |
| Noise level..... | 74 dB(A) |

Building-in possibilities

The 505NG vehicle restraint system can be installed in both existing as new buildings.

The surface on which the restraint system is mounted is important. It must be level and made from concrete or stelcon plate. Stelcon plates must hereby be placed in a layer of stabilised sand or lean concrete. Concrete foundations must be poured for other types of surfaces.

The detailed Loading Systems built-on drawings are available on request.