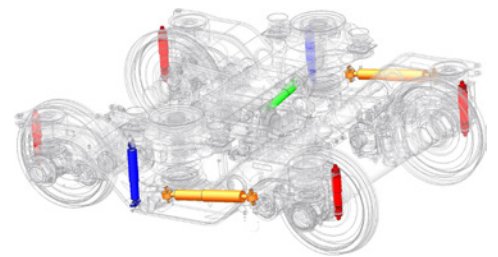


SHOCKEASE

Shock Absorbers

The hydraulic shock absorbers (dampers) **ShockEase** offered by Knorr-Bremse are suitable for a wide range of applications. Their robust design ensures that they are suitable for harsh environmental conditions and usage. The application is suitable for mounting conditions from vertical to horizontal. The damping forces and mountings are customizable to meet the requirements. The dampers are available in a damping force range from 1 kN @ 0.3 m/sec velocity to 25 kN @ 0.01 m/sec velocity.



Customer benefits

- Proven track record
- Worldwide pre-sales and after-sales support
- 1-to-1 replacement for all running applications and sizes available
- Stable damping characteristics even at high velocities
- Customizable for harsh environmental conditions
- Proven designs up to 50 g vibration level
- Long service life, no routine maintenance required
- Both serviceable and non-serviceable variants available
- Easy overhaul


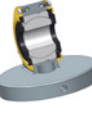



Applications

- Coaches
- Locomotives – electric and diesel
- Suburban multiple units, e.g. EMUs, DMUs, metros, streetcars
- Special-purpose wagons
- Special-purpose vehicles, e.g. cranes, maintenance machinery

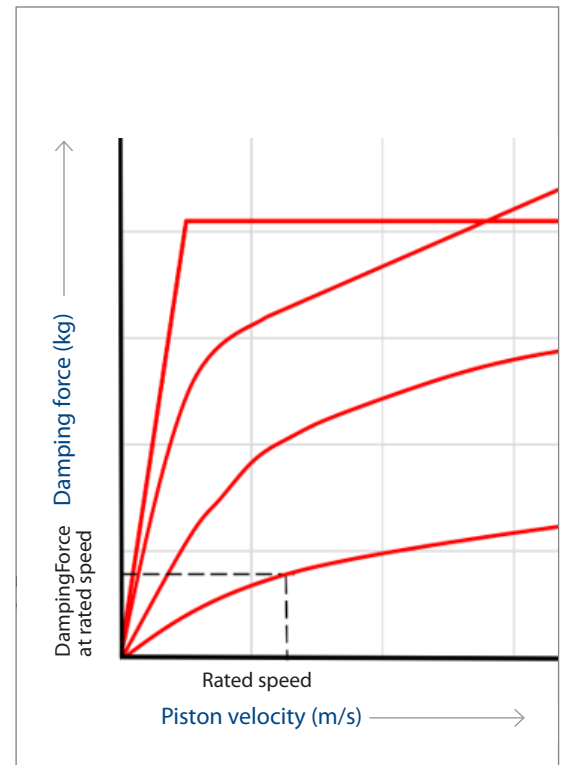


KNORR-BREMSE

Overview

| TYPE | FIELD OF APPLICATION | DESIGN SERIES P ROD/CYL/ BODY/DUST COVER | ATTACH- MENT | DAMP- ING FORCE |
|------|--|--|---|-----------------------|
| SDLL | Primary and secondary Vertical and horizontal | i) 20/50/70/80 ii) 22/45/70/80 |  | up to 7 kN |
| SDL | Primary and secondary Vertical and horizontal | i) 28/40/75/82 |  | up to 10 kN |
| SDS | Primary and secondary Vertical and horizontal | i) 36/51/100/108 ii) 36/51/89/102 iii) 45/64/108/121 |  | up to 15 kN |
| SDY | Anti-yaw | i) 36/51/100/108 ii) 45/64/108/121 |  | up to 25 kN |
| SDLK | Inter-car damper for light rail vehicles | i) 28/40/75/82 ii) 36/51/89/102 |  | up to 10 kN |

Customized Performance Curves

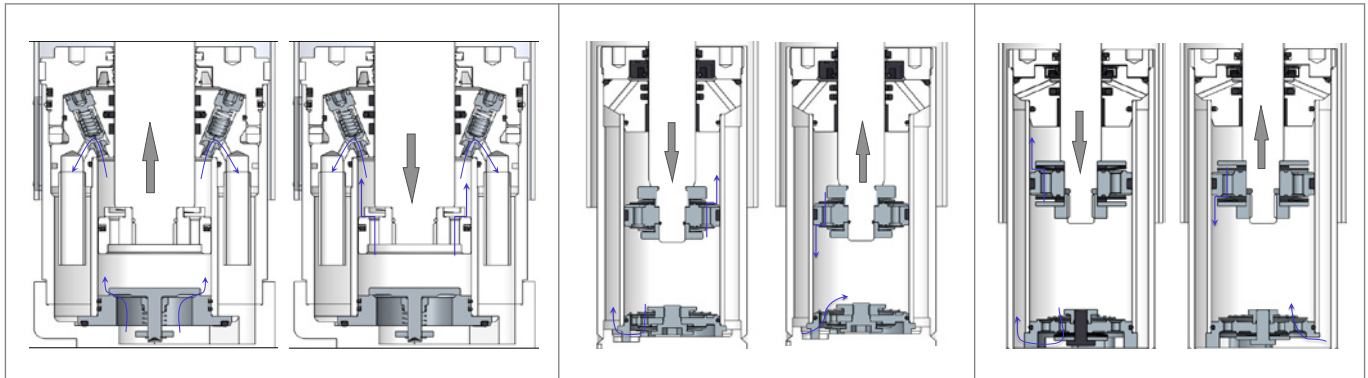


Working Principle

SDL, SDS, SDY & SDLK UNI-DIRECTIONAL

SDLL 1 BI-DIRECTIONAL

SDLL 2 BI-DIRECTIONAL



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