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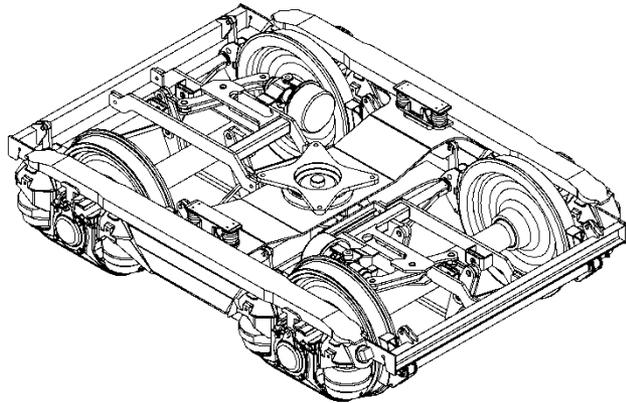
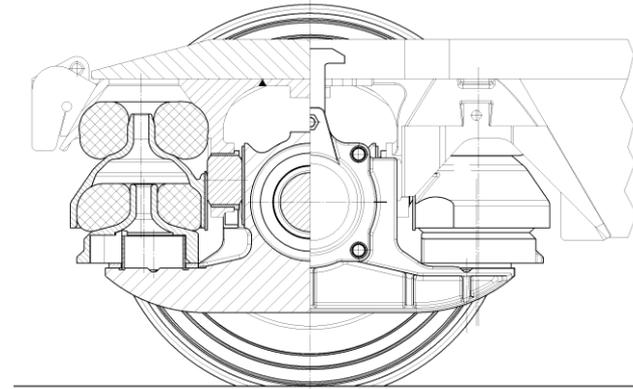
**The best Bogie, DRRS-EFD,
for the european freight
railway wagons in Europe and
in the world**

DRRS-EFD – The best bogie for the european freight railway traffic

- **This bogie has been developed at first by Wagonfabrik TALBOT,Aachen 1985 and the further development has been by Kombibahn Schweiz TBT GmbH, today Kombibahn Europe TBT GmbH in germany, in close collaboration with the railways societys in europe.**
- **Through this double rubber rolling spring system and the radially adjustable wheel-sets, this bogie guarantees high running stability, also in the case of extremely problematic situations or large track defects.**
- **Thanks to this double rubber rolling spring system, it is to reduce considerably the noise of the freight cars traffic.**

DRRS-EFD Variation

**Bogie type in rail gauge: 1000mm,
1435mm, 1520 and 1676 mm
Wheel diameter from
730mm to 920 mm
Maximum axle load from 16t to 25t
Vmax.up to 160km/h with discbrake
Vmax. up to 120km/h with block-and
compactbrake- composite brake**

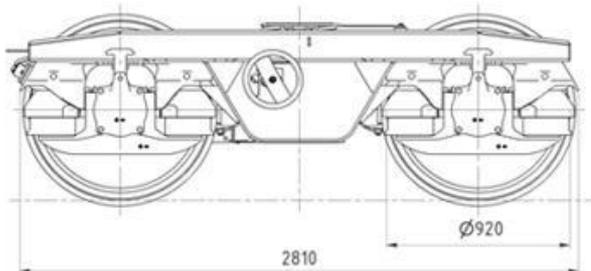


DRRS-EFD axleload max.25t



DRRS-EFD Bogie-Standard

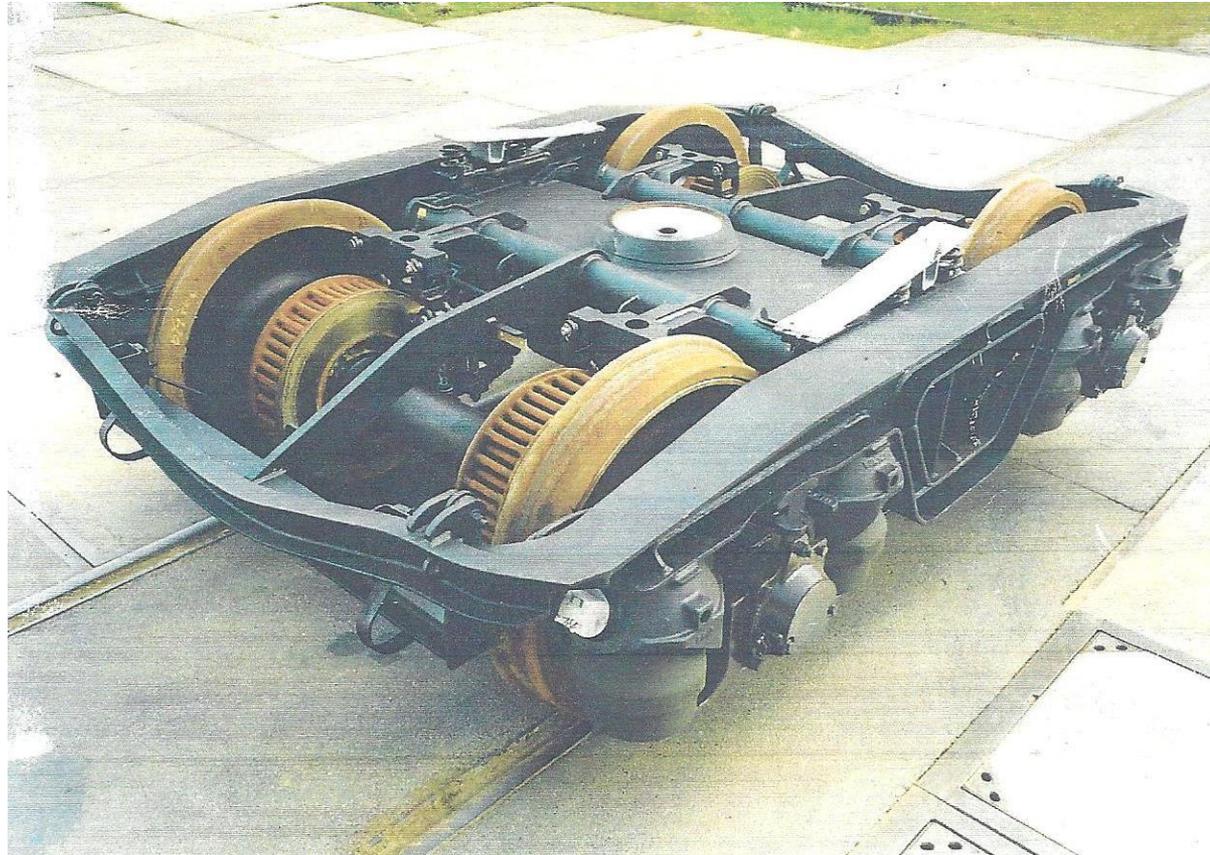
DRRS-EFD



- Axle: load up to 25 t
- Speed: 120 km/h
- Wheel set: UIC 920 mm \varnothing
- Wheel set bearing: cylinder roller bearing with housing
- Primary springs: rubber roll spring
- Side bearers: sprung UIC side bearers
- Damping: friction damping
- Brake: block, uni- or bilateral, feat. central wagon brake rigging or integrated in bogie
- Wheel base: 1.800 mm.
- Bogie envelope: UIC, TSI-Wag, OTIF
- Wagon-Bogie Connection: UIC/TSI bogie centre pivot

DRRS-EFD Bogie

with diskbrake



DRRS-EFD Bogie Application

for containerwagon-high speed until 160km/h



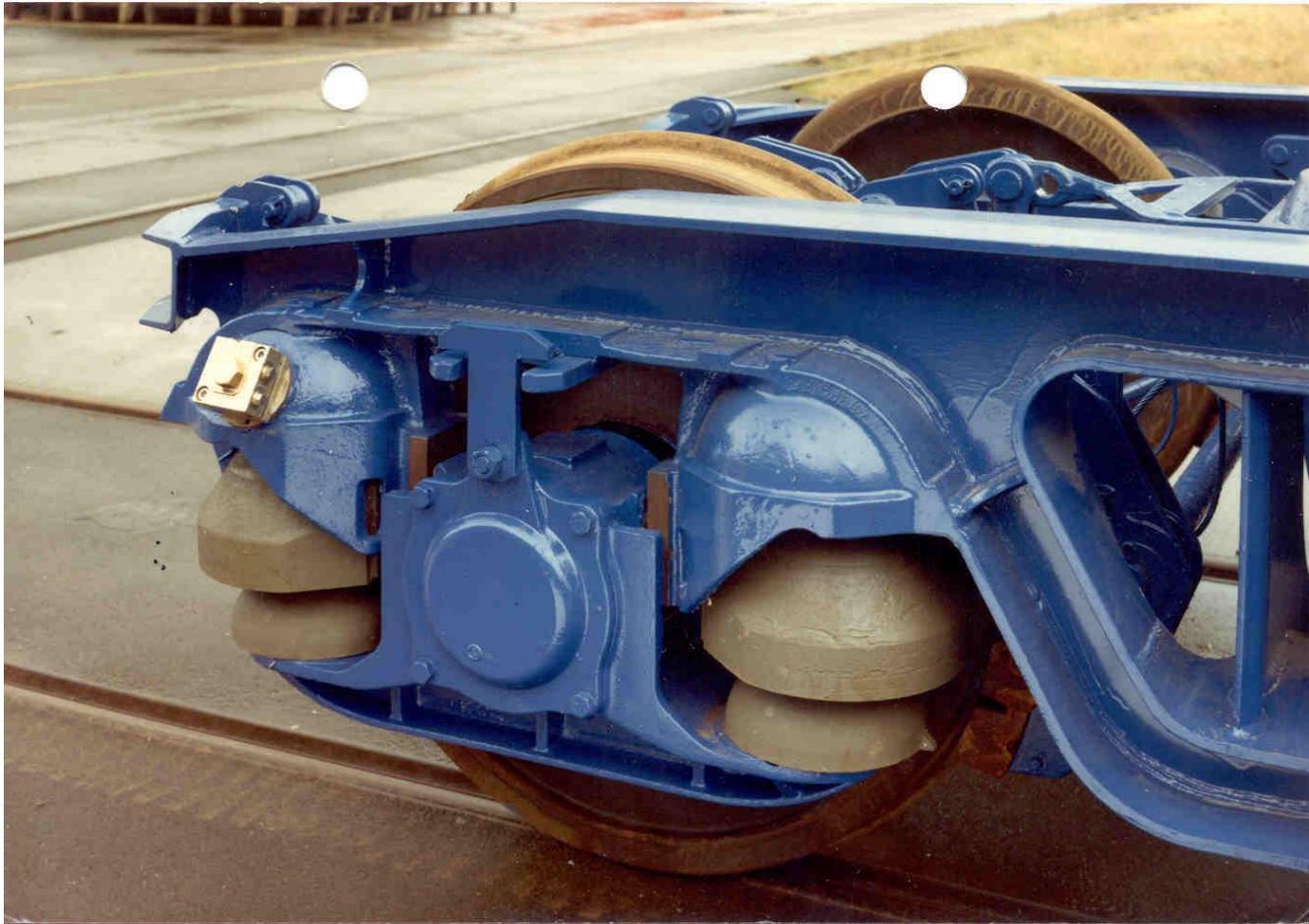
DRRS-EFD European applications

Anwendungen

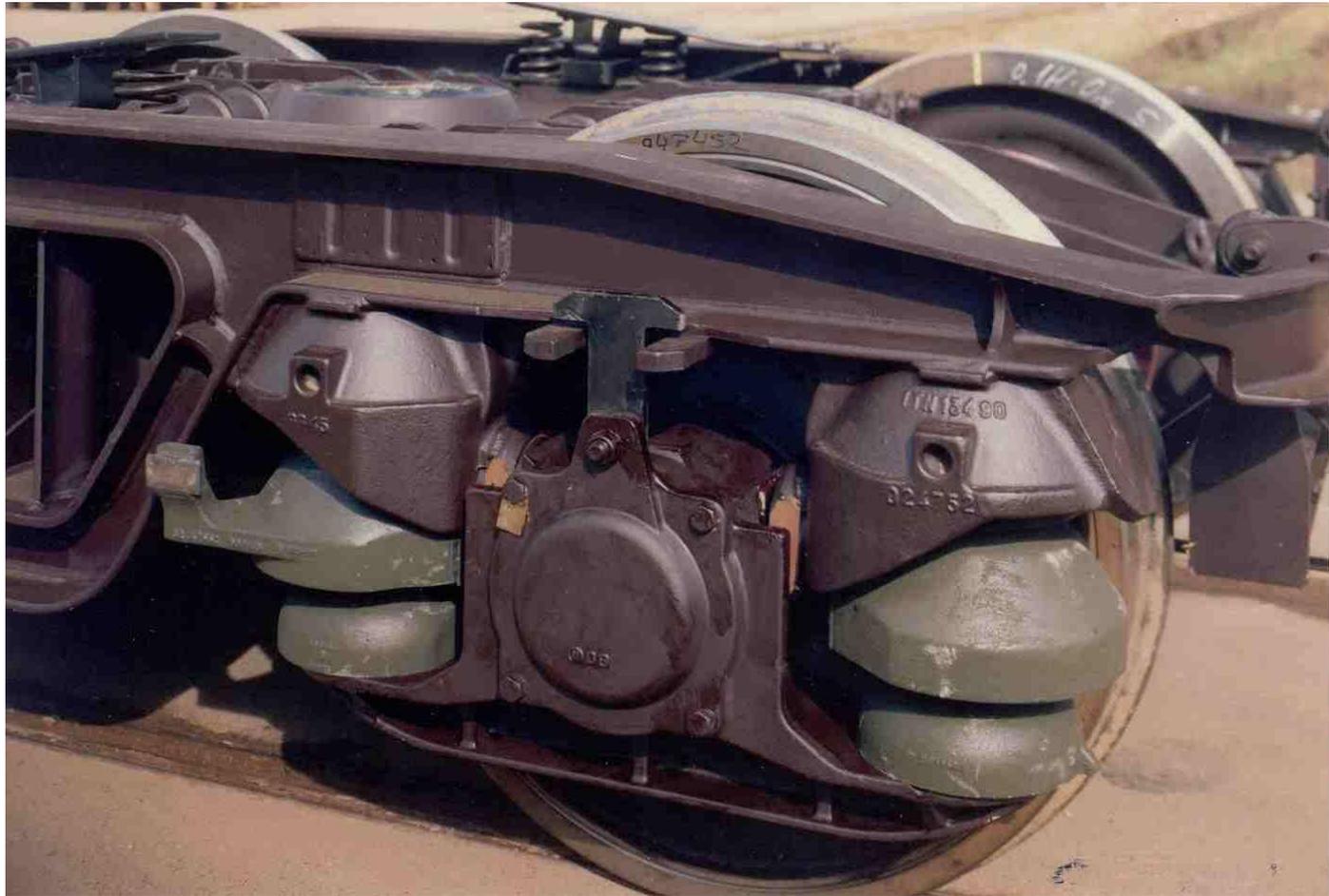
- **Reference: ...**
- **DBAG: DRRS-EFD for Containerwagons with diskbrake**
- **Kombiverkehr :DRRS-EFD for Pocket wagons T2000**
- **SBB/ HUPAC: Container and Pocket wagons**
- **SBB: DRRS-EFD with diskbrake for cargosprinter**
- **SJ-Sweden: DRRS-EFD for ore transport wagons**
- **VR-Finland: DRRS-EFD for flat freight wagons**
- **DSB-Denmark: DRRS EFD for Sliding door freight cars**
- **India-Railways: DRRS-EFD for freight wagons**
- **Rhätische Bahn,switzerland:DRRS-EFD18 for freightcars**
- **MOB,switzerland DRRS-EFD18 for freightcars**

DRRS-EFD Rubber Rolling Spring

suspension with Loading valve of automatic brake



DRRS-EFD Rubber Rolling Spring suspension



DRRS-EFD Rubber Rolling Spring suspension

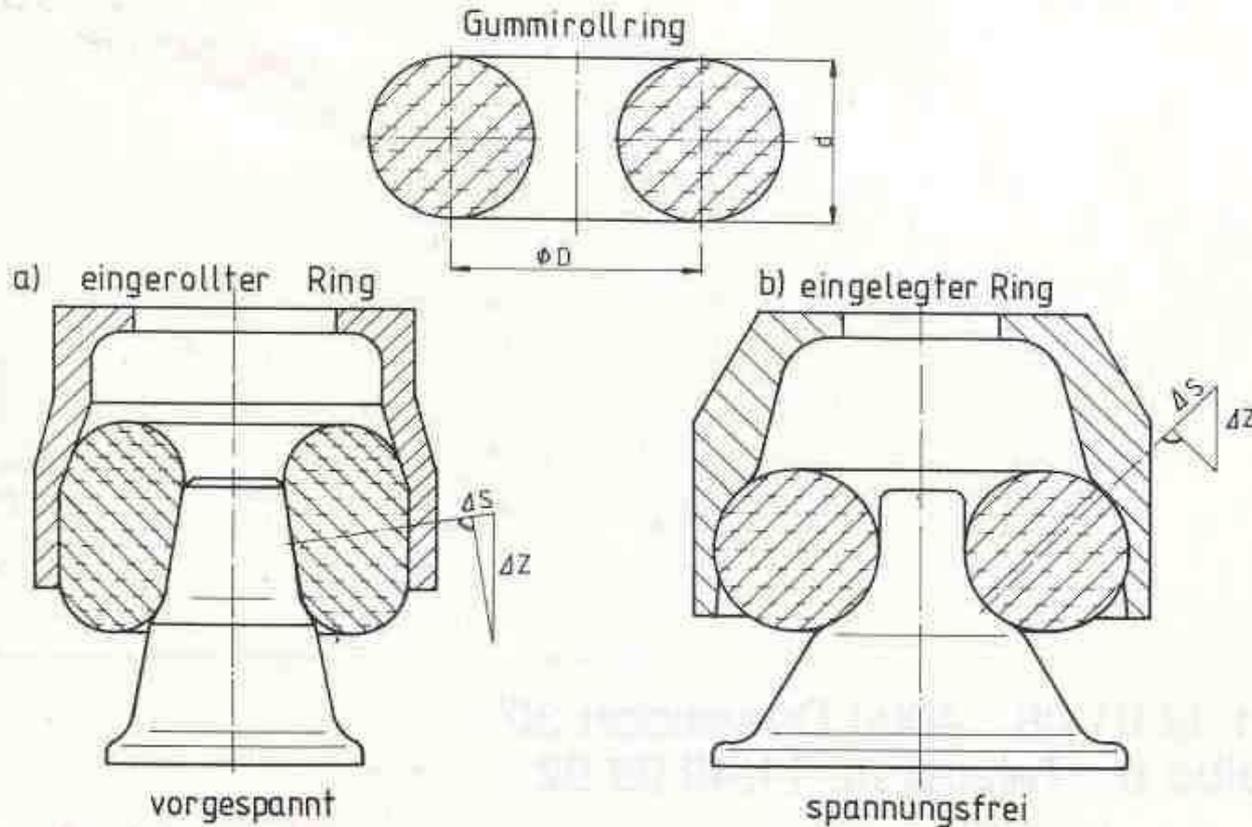


Abb. 1: Gummirollfeder, Ausführungen mit eingerollten oder eingelegten Gummiringen

DRRS-EFD Double Rubber Rolling Spring - suspension



DRRS-EFD Rubber Rolling Spring suspension (Federung)

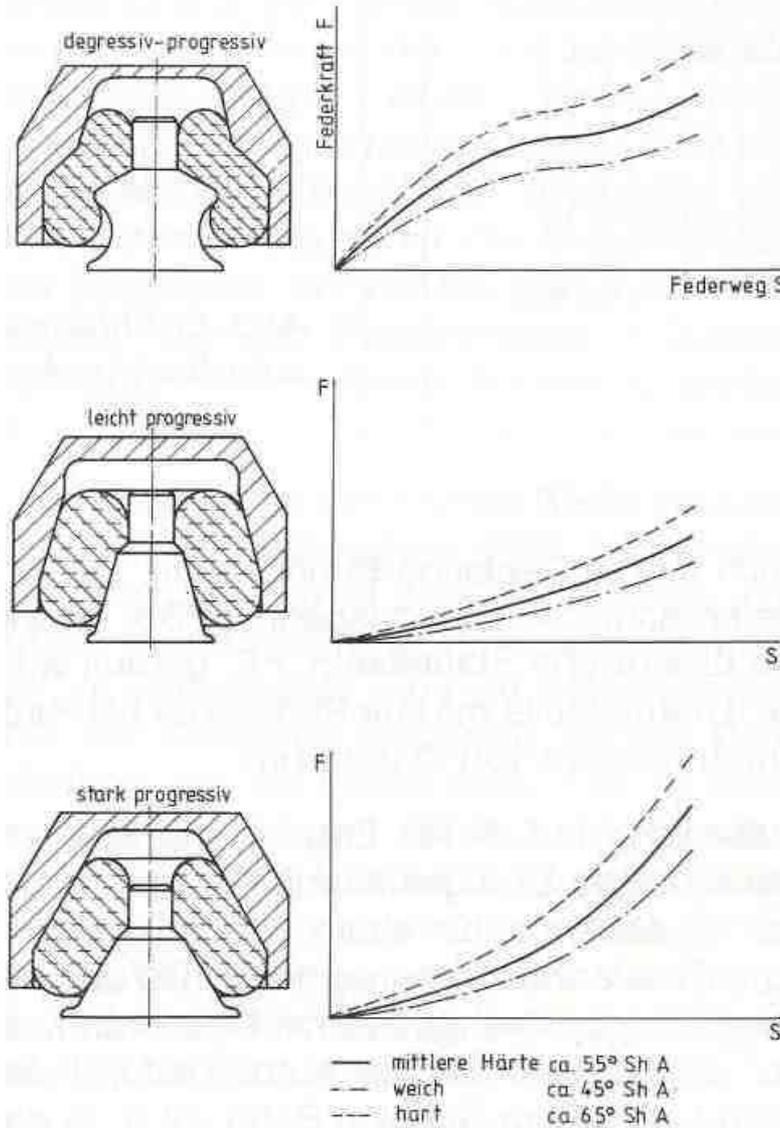


Abb. 3: Federkennung in Abhängigkeit von der Geometrie und der Gummi-härte

DRRS-EFD application (Anwendung)

The middle Bogie of Wagons with 3 Bogies
(for example wagon T3000Typ Sdggmrs and Sgns-wagon)

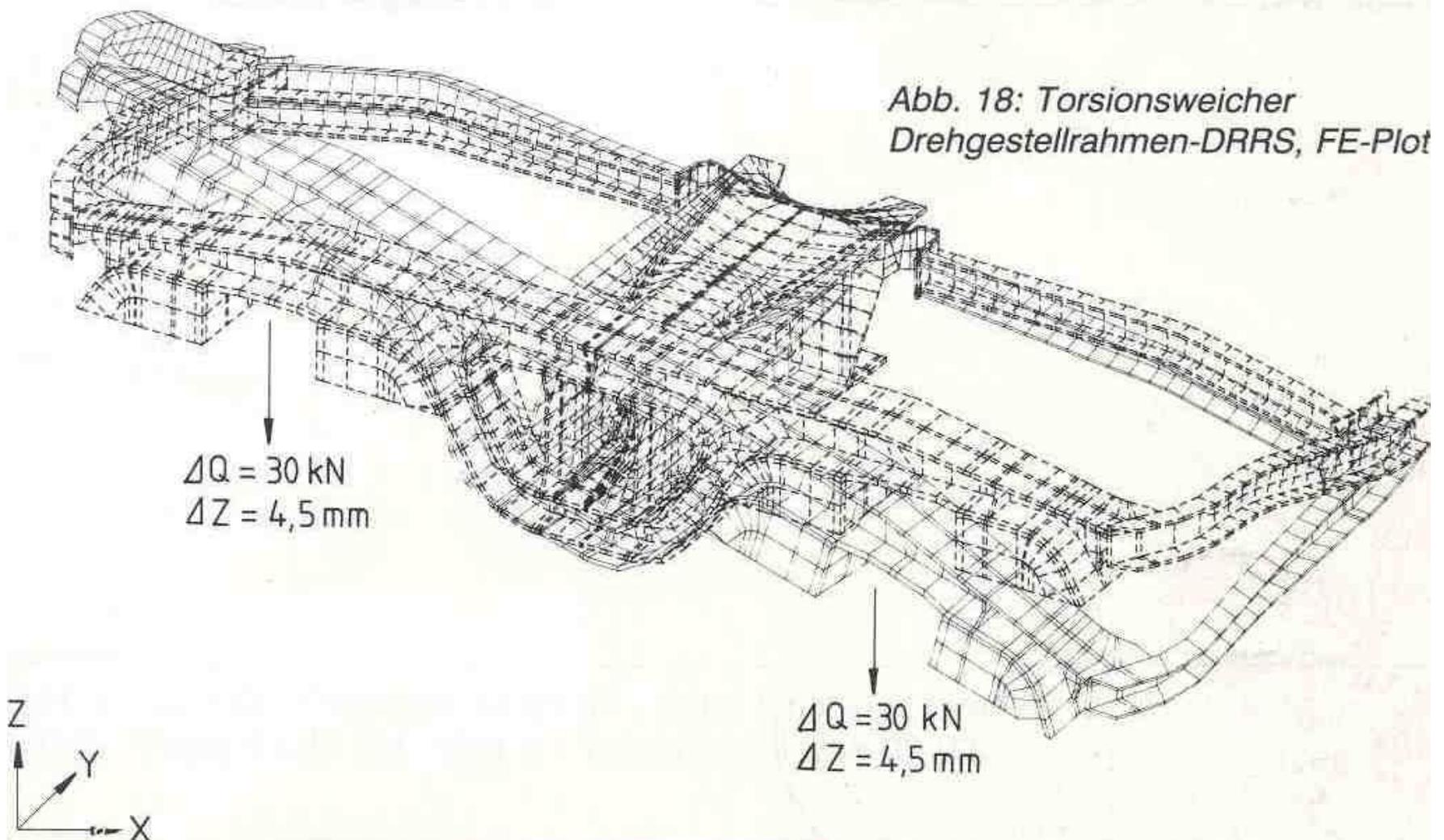


DRRS-EFD Bogie frame

for Vmax. 160 km/h and axleloading 20t

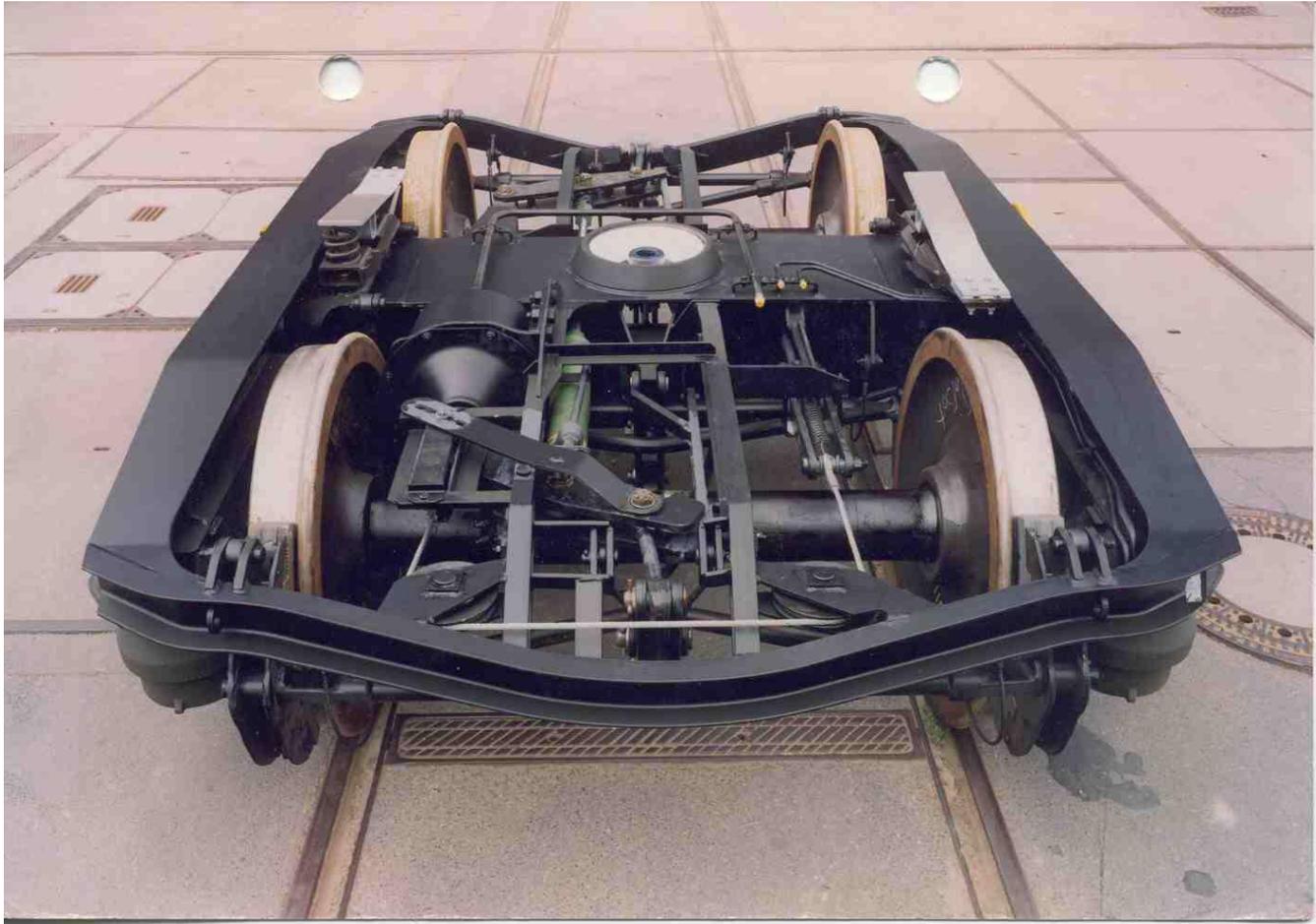


DRRS-EFD Bogie frame



DRRS-EFD Bogie frame

Bogie with composit- blockbrake



DRRS-EFD Bogies for international traffic

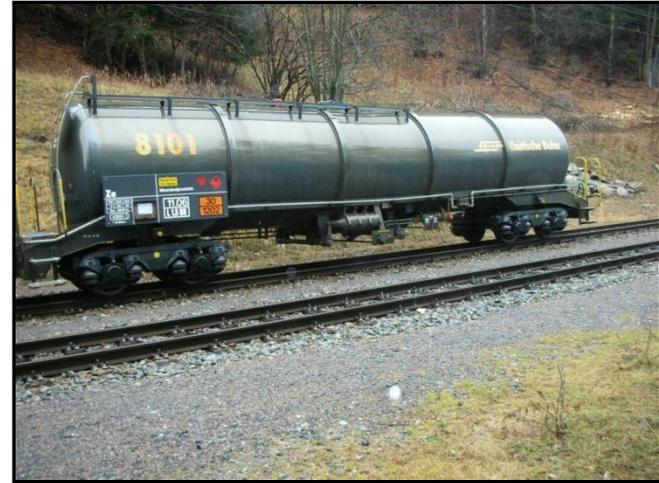
The DRRS-EFD bogie does respect the UIC, TSI –wag, OTIF and all EN-Norm rules regarding

- Interchangeability (UIC 510-1)
- Load that has to be resisted (UIC 510-3)
- Running dynamics (UIC 518)
- Safety against derailment (UIC 530-2)
- Standard wheelsets (UIC 516-3 and UIC 811-1)
- Cylindrical roller bearings (UIC 515-5 and 814)

The best Bogie, Type DRRS-EFD, for the freight railway wagons in Europe and in the world

- **- Function of the principle for 2-axle bogie DRRS-EFD**
- **The bogie frame has an “H” shape and is equipped with “U” shaped straight headstocks, which are fastened to the external axle-guidances in a flexible way.**
Through the use of innovative double rubber rolling springs, we were able to develop a new bogie concept resulting in much lower maintenance costs.
- **This spring system, which is applied on both sides of the traditional UIC axle-box, assures the full autonomy of the wheel-sets and does not cause wear on suspension elements or bolts.**
- **This innovative DRRS-EFD bogie offers a high level of security against derailment**
- **its double rubber rolling spring system and the radially through adjustable wheel-sets, this bogie guarantees high running stability, also in the case of extremely problematic situations or large track defects.**
- **The double rubber rolling spring system produces very limited guiding forces, as well as very low wear both of the wheel flange and of the rail.**
- **Thanks to this double rubber rolling spring system, it is possible to reduce considerably the noise of the freight car traffic.**

DRRS-EFD18 for narrow-gauge

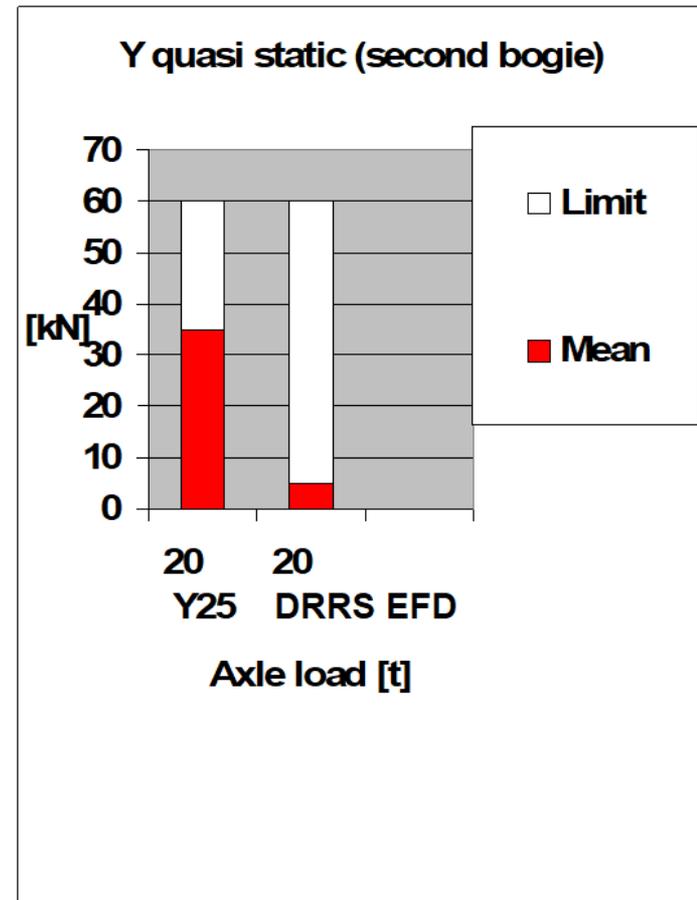
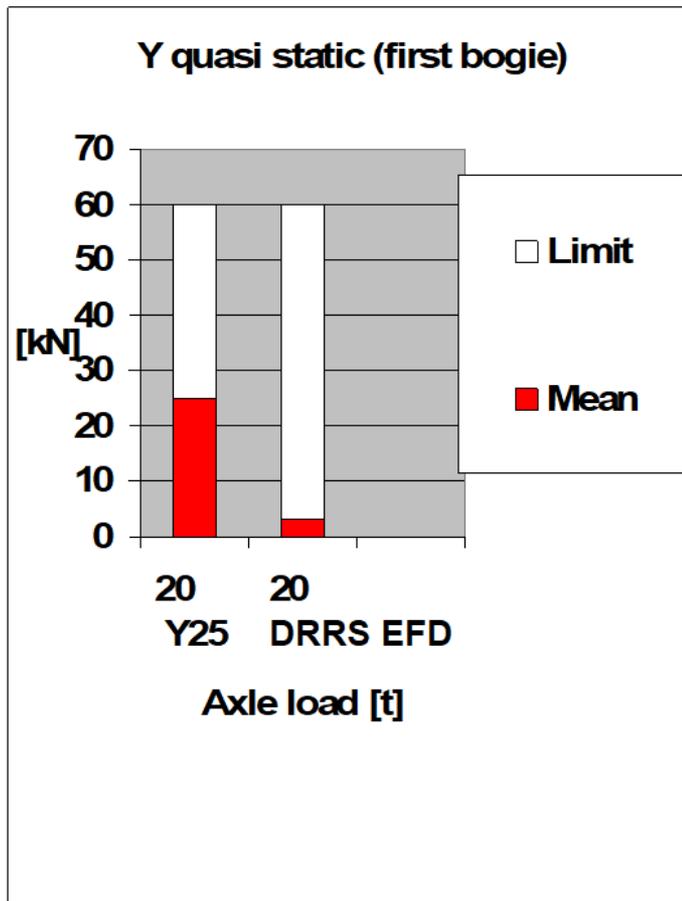


- Running-Tests with Tank-wagon in Switzerland – Berniner Pass into track curve 38 m of narrow-gauge 1000 mm

Comparison DRRS-EFD / Y25 (ERRI B12/DT314)

Track fatigue - Y quasi static (UIC 518)

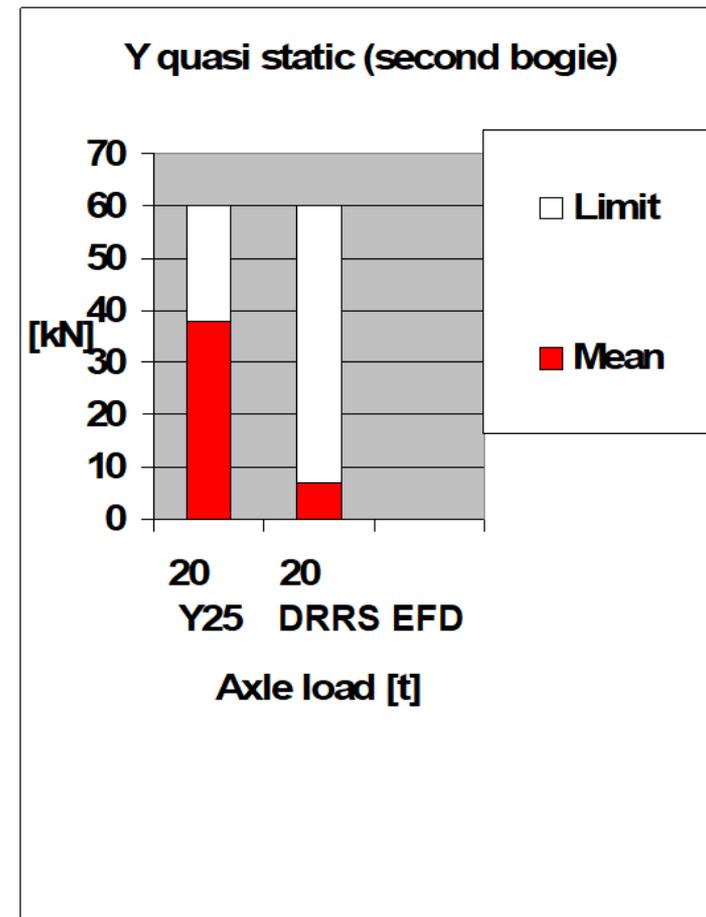
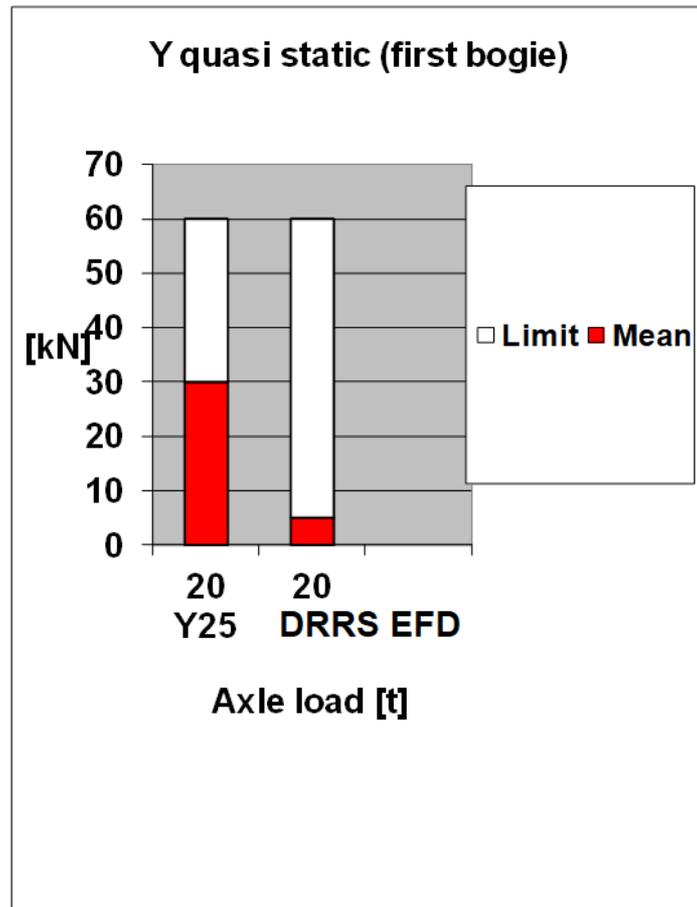
Mean values - Curves, R = 278m, 25 km/h



Comparison DRRS-EFD / Y25 (ERRI B12/DT314)

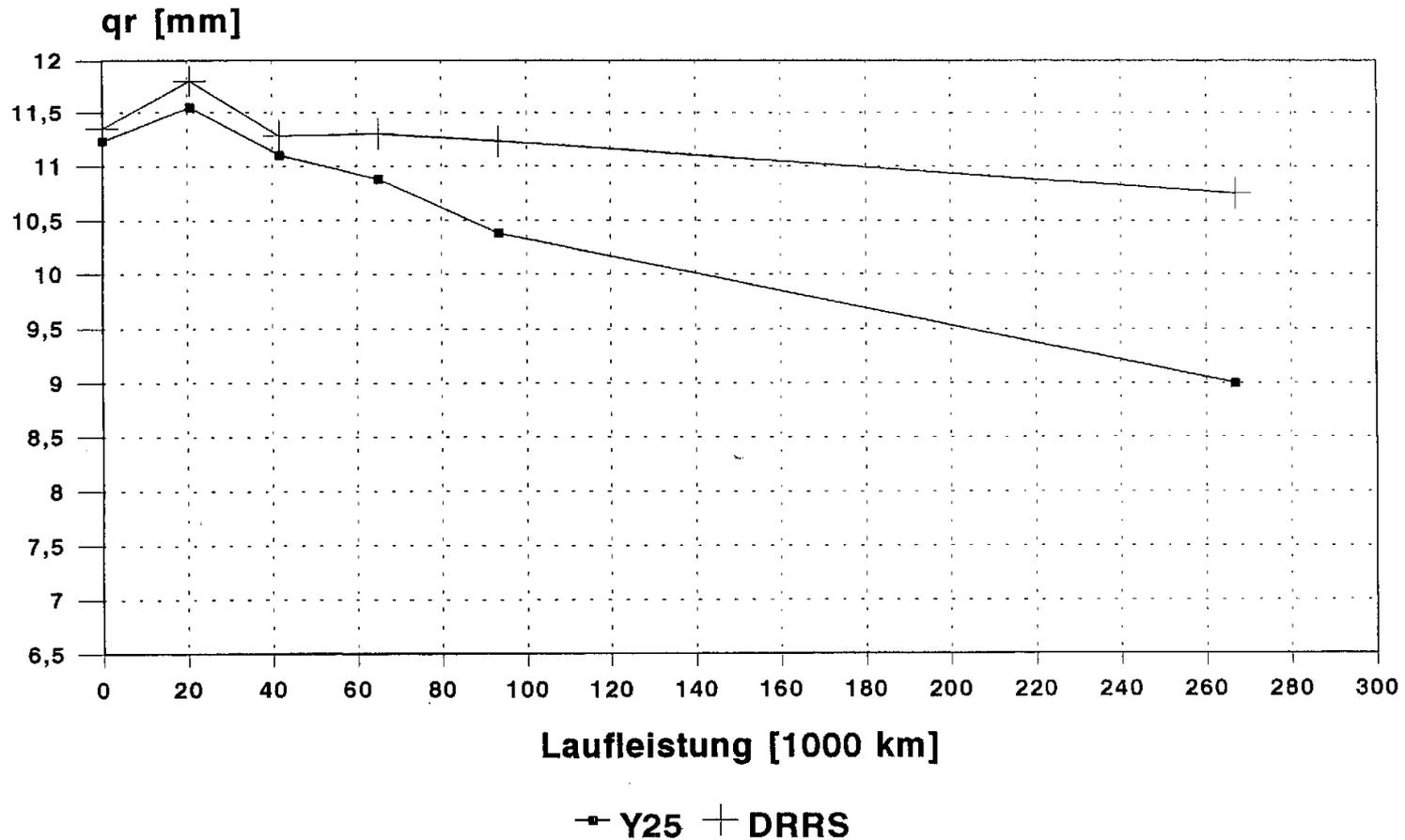
Track fatigue - Y quasi static (UIC 518)

Mean values - Curves, R = 278m, 75 km/h



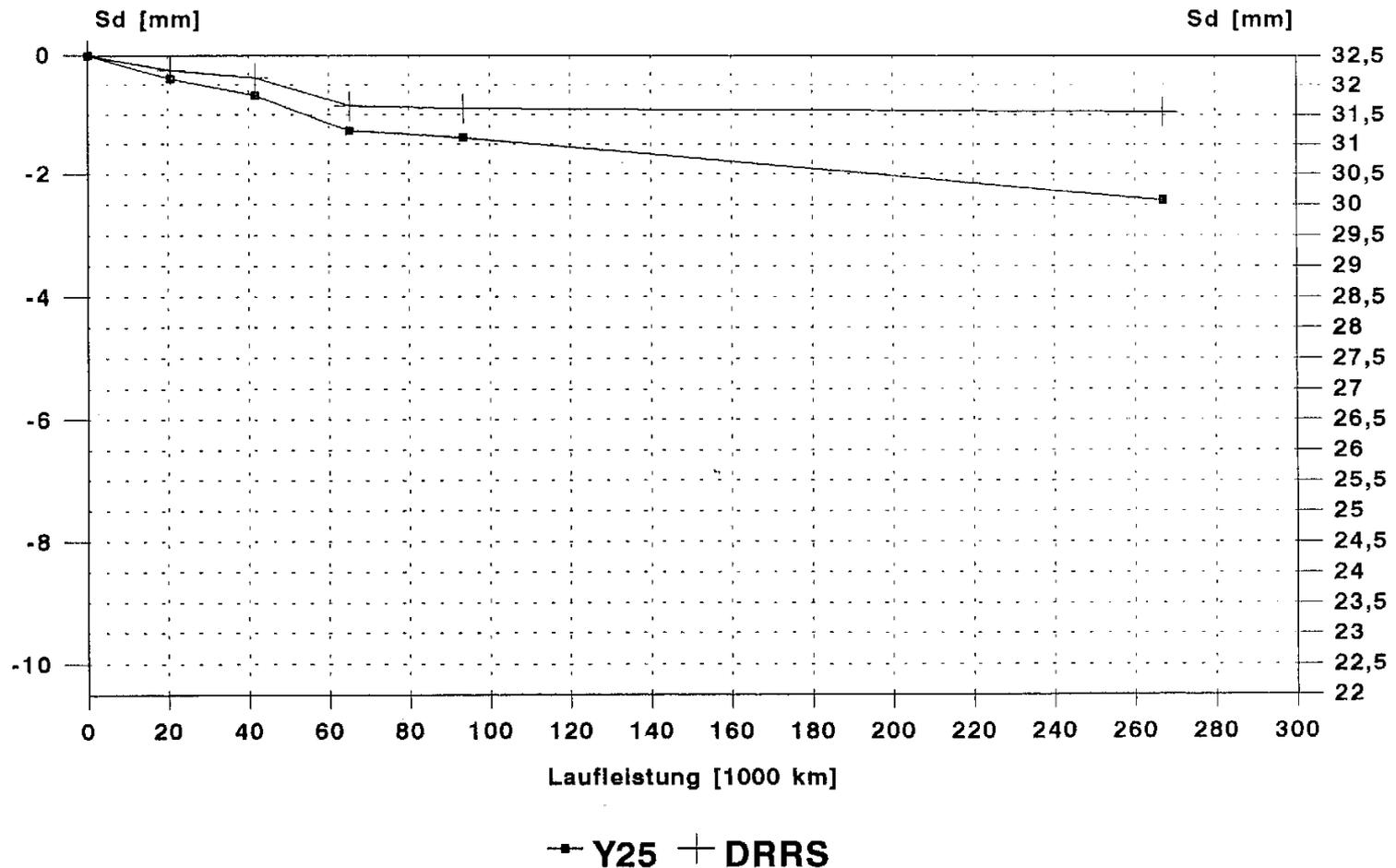
Comparison DRRS-EFD / Y25

Wheel dimension q_r – Container flats



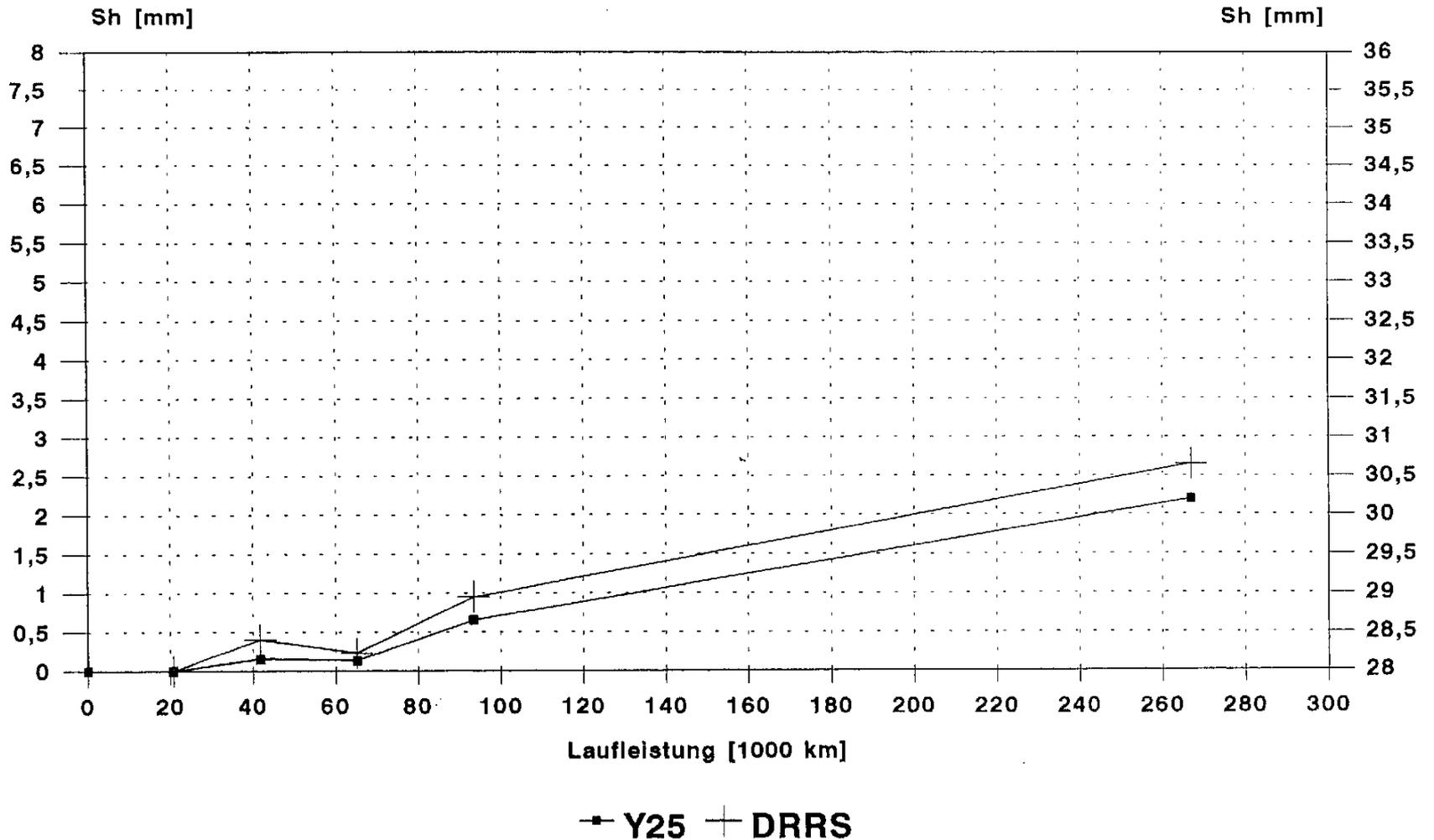
Comparison DRRS-EFD / Y25

Wheel flange thickness – Container flats



Comparison DRRS-EFD / Y25

Wheel flange height – Container flats



DRRS-EFD Bogie for 160 kph

axleloading 20t

