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**SAF** *Holland*  
Group

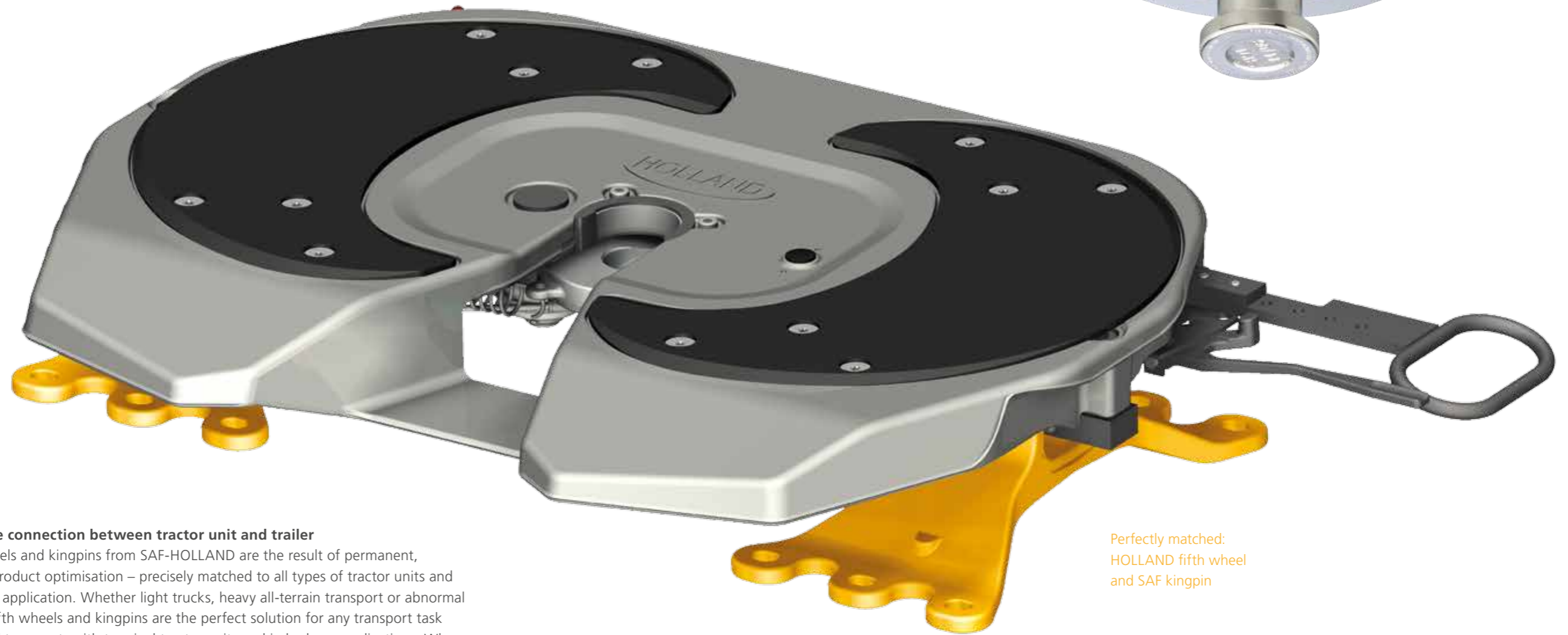


*Holland*

# FIFTH WHEELS

OPTIMISED FOR SAFETY

# FIFTH WHEELS AND KINGPINS



## The reliable connection between tractor unit and trailer

All fifth wheels and kingpins from SAF-HOLLAND are the result of permanent, systematic product optimisation – precisely matched to all types of tractor units and their area of application. Whether light trucks, heavy all-terrain transport or abnormal loads, our fifth wheels and kingpins are the perfect solution for any transport task – both in rail transport, with terminal tractor units and in harbour applications. When used in combination with the SAF-HOLLAND kingpins, we guarantee complete safety and reliability.

SAF-HOLLAND  
develops and  
manufactures  
innovative,  
high-quality  
connections

Perfectly matched:  
HOLLAND fifth wheel  
and SAF kingpin

6 T

- light distribution traffic
- mid-sized carrier class
- recreational vehicles up to 7.5t

GC 6



Lock size: 2"  
 Imposed load: 6,000 kg  
 D-value: 49 kN  
 Overall height: 120 mm

14/15 T

- flexible distribution traffic
- silo, tank and volume transport
- two-axle tractor

FW3214-W



Lock size: 2"  
 Imposed load: 14,000 kg  
 D-value: 104 kN  
 Overall heights: 165, 190, 225 mm

20 T

- standard long-distance haulage
- silo, tank and volume transport
- two- and three-axle tractors

SK-S 36.20 / SK-S 36.20 Recolube



Lock size: 2"  
 Imposed load: 20,000 kg  
 D-value: 152 kN  
 Overall heights: 128, 150, 185, 225, 250 mm

36 T

- HGV traffic
- traffic in difficult terrain

SK-HD 38.36



Lock size: 2"/3.5"  
 Imposed load: 23,000 kg (2")  
 36,000 kg (3.5")  
 D-value: 162/260 kN  
 Overall heights: 150, 190 mm

TERMINAL 36 T

- for transport with terminal tractor units

FW3510-TR



Lock size: 2"  
 Imposed load: 36,000 kg  
 23,000 kg\*  
 D-value: 175 kN  
 \*(when used in highway traffic)

HARBOUR 45 T

- special model for harbour applications

FW0E70-T



Imposed load: up to 45,000 kg (2")  
 Gross Combination Weight: 120,000 kg (3.5")

SK-S 36.20 H



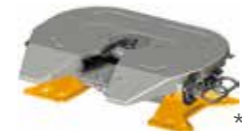
Lock size: 2"  
 Imposed load: 15,000 kg  
 D-value: 110 kN  
 Overall height: 167 mm  
 Lift heights: 100, 150, 200 mm

SK-S 36.20 W / SK-S 36.20 NoLube



Lock size: 2"  
 Imposed load: 20,000 kg  
 D-value: 152 kN  
 Overall heights: 128, 150, 185, 225, 250 mm

SK-HD 38.36 G



Fifth wheel for off-road use with gimbal mounting  
 Lock size: 2"/3.5"  
 Imposed load: 23,000 kg (2")  
 36,000 kg (3.5")  
 D-value: 162/260 kN  
 Overall height: 290 mm

Kingpin



D-value 2" 50S15 165 kN  
 D-value 2" 50S18 165 kN  
 D-value 3.5" 90S15 165 kN  
 D-value 3.5" 90S18 320 kN

FW3510



Lock size: 2"  
 Imposed load: 23,000 kg  
 D-value: 175 kN  
 Overall heights: 150, 180, 200 mm

**Specifications**  
 The load data specified only applies to operation on paved roads and to transport conditions usual in Central Europe. Please contact us regarding operating conditions which deviate from these. We reserve the right to modify dimensions or design if required. No responsibility is taken for the correctness of the details provided, these are solely intended for technical information.

\* no Type Approval to ECE R 55



**Imposed load:** 6,000 kg (2")  
**D-value:** 49 kN  
**Overall height:** 120 mm  
**ECE test no.:** E11 55R-01 6737

**Lightweight, spheroidal graphite cast iron 6t fifth wheel optimised for midsized distribution vehicles and volume transports**

- with exchangeable wear ring
- Safe and comfortable single-handed operation
- Automatic safety lock
- Low-maintenance bearings
- Lubrication channels for effective grease flow
- Wear ring fully compatible with SK-S 36.20
- Connections for optional grease cartridge
- Approved for forced steering



**Imposed load:** 20,000 kg (2")  
**D-value:** 152 kN  
**Overall heights:** 140 (128 mm + 12 mm MP), 150, 185, 225, 250 mm  
**ECE test no.:** E1 55R-01 0218

**The lightweight, spheroidal graphite cast iron 20t fifth wheel**

- Up to 33 kg lighter, reliable and robust
- Safe single-handed operation, automatic safety lock
- Simple wear adjustment
- Permanent, maintenance-free bearings
- Optimised lubrication channels for effective grease flow
- Connections for central lubrication
- Optionally available with RECOSS® system (available ex works at Mercedes-Benz, Volvo and Renault)
- Optionally available with direct or angle bracket mounting
- Approved for forced steering
- optionally combined with RECOLUBE (available ex works at MAN vehicles)



**Imposed load:** 14,000 kg (2")  
**D-value:** 104 kN  
**Overall heights:** 165, 190, 225 mm  
**ECE test no.:** E11 55R-01 7836

**The first 14t chassis-integrated fifth wheel**

- Weight- and load-optimised for more potential payload
- Tuned exactly to the tractor unit
- Use of load-optimised and wear-optimised slide plates
- Low maintenance and particularly service-friendly
- Safe and comfortable single-handed operation
- Available for Mercedes-Benz Actros and Antos with wheelbase 3,700 mm with coupling point 600 mm
- available with 1-point automatic grease cartridge for lubrication of the safety lock



**Imposed load:** 20,000 kg (2")  
**D-value:** 152 kN  
**Overall heights:** 140 (128 mm + 12 mm MP), 150, 185, 225, 250 mm  
**ECE test no.:** E1 55R-01 0218

**The lightweight, low maintenance spheroidal graphite cast iron 20t fifth wheel**

- Up to 33 kg lighter, designed for highway application
- Less grease consumption
- Easily replaceable low friction wear plates
- Safe single-handed operation, automatic safety lock
- Simple wear adjustment
- Permanent, maintenance-free bearings
- Optionally available with RECOSS® system (available ex works at Mercedes-Benz, Volvo and Renault)
- Optionally available with direct or angle bracket mounting
- Approved for forced steering
- optionally available with automatic grease cartridge



**Imposed load:** 15,000 kg (2")  
**D-value:** 110 kN  
**Overall heights:** 167-267, 167-317, 167-367 mm  
**ECE test no.:** E11 55R-01 1381

**The established and proven 15t dual height fifth wheel, cast from ductile iron and with automatic lubrication**

- Extremely robust and user friendly
- Weight optimised model
- Simple wear adjustment
- Automatic safety lock
- Approved for forced steering
- optionally combined with RECOLUBE (available ex works at MAN vehicles)
- Controlled from truck ECU
- Connections for central lubrication



**Imposed load:** 20,000 kg (2")  
**D-value:** 152 kN  
**Overall heights:** 140 (128 mm + 12 mm MP), 150, 185, 225, 250 mm  
**ECE test no.:** E1 55R-01 0218

**The lightweight 20t fifth wheel with grease-free NoLube Technology**

- Up to 33 kg lighter, designed for highway application
- Easily replaceable low friction wear plates
- Safe single-handed operation
- Automatic safety lock
- Simple wear adjustment
- Permanent, maintenance-free bearings
- Optionally available with RECOSS® system (available ex works at Mercedes-Benz, Volvo and Renault)
- Optionally available with direct or angle bracket mounting
- Approved for forced steering
- Light and easily replaceable 2 component polymer wear ring
- Lock with unique low friction greaseless NoLube coating



**Imposed load:** 23,000 kg (2")  
**D-value:** 175 kN  
**Overall heights:** 150, 180, 200 mm  
**ECE test no.:** E11 55R-01 6172

- The robust 23 t fifth wheel coupling made of high-strength cast steel for universal use**
- Long service life and universal scope of application
  - Exemplary reliability
  - Low operation costs
  - ISO mounting system
  - Suitable for steering wedge applications
  - Infinite wear adjustment
  - Flat, machined top surface
  - Approved for forced steering
  - High quality and extremely flat machined top surface



**Imposed load:** up to 36,000 kg (2"), (23,000 kg when used in highway traffic)  
**D-value:** 175 kN (2")  
**ECE test no.:** E11 55R-01 6172

- The Ideal 36t cast steel air-operated fifth wheel – specially designed for terminal tractor applications**
- Designed and adapted for the use in terminal tractors
  - Cast from particularly high-grade steel
  - Designed for higher imposed loads and long service life
  - Optionally available with manual secondary locking mechanism for trailer movements on public roads
  - Optionally available with electronic locking sensor technology
  - Suitable for steering wedge applications



**Imposed load:** 23,000 kg (2"), 36,000 kg (3.5")  
**D-value:** 162 kN (2"), 260 kN (3.5")  
**Overall heights:** 150, 190 mm  
**ECE test no.:** E11 55R-01 8550 (2"), E11 55R-01 8549 (3.5")

- The robust cast steel 36t fifth wheel for heavy duty transport**
- Permanent, maintenance-free bearings
  - Conversion from 3.5" to 2" and vice versa possible
  - Suitable for steering wedge applications
  - Optionally available with RECOLUBE



**Imposed load:** up to 45,000 kg (2")  
**Gross Combination Weight:** 120,000 kg (3.5")

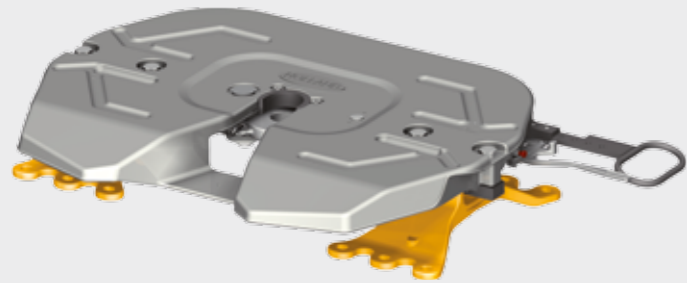
- The 45t heavy-duty cast steel air operated fifth wheel – specially designed for harbour applications**
- Available with 2" or 3.5" locks
  - Precisely adjusted for heavy duty use in terminal tractors
  - Cast from particularly high-grade steel
  - Designed for higher imposed loads and long service life
  - No Type Approval to ECE R 55



**Imposed load:** 23,000 kg (2"), 36,000 kg (3.5")  
**D-value:** 162 kN (2"), 260 kN (3.5")  
**Overall height:** 290 mm

- The 36t cast steel fifth wheel for heavy transportation – off-road use**
- Off-road version with cardanic bearings
  - Conversion from 3.5" to 2" and vice versa possible
  - Suitable for steering wedge applications
  - No Type Approval to ECE R 55

# SK-S 36.20 SERIES SPHEROIDAL GRAPHITE CAST IRON 20T FIFTH WHEEL



All of the fifth wheels in the SK-S 36.20 range from HOLLAND are particularly light thanks to the spheroidal graphite cast iron, and are equipped with a safety latch that allows coupling or uncoupling with one hand.

The safety latch ensures at first glance a clear visual indication, whether the fifth wheel is securely locked or not: if the latch is in the „raised“ or „lowered“ position. Hence easily and safely avoiding mis-couples.

## SIMPLE AND DECISIVE VISUAL SAFETY INDICATION!

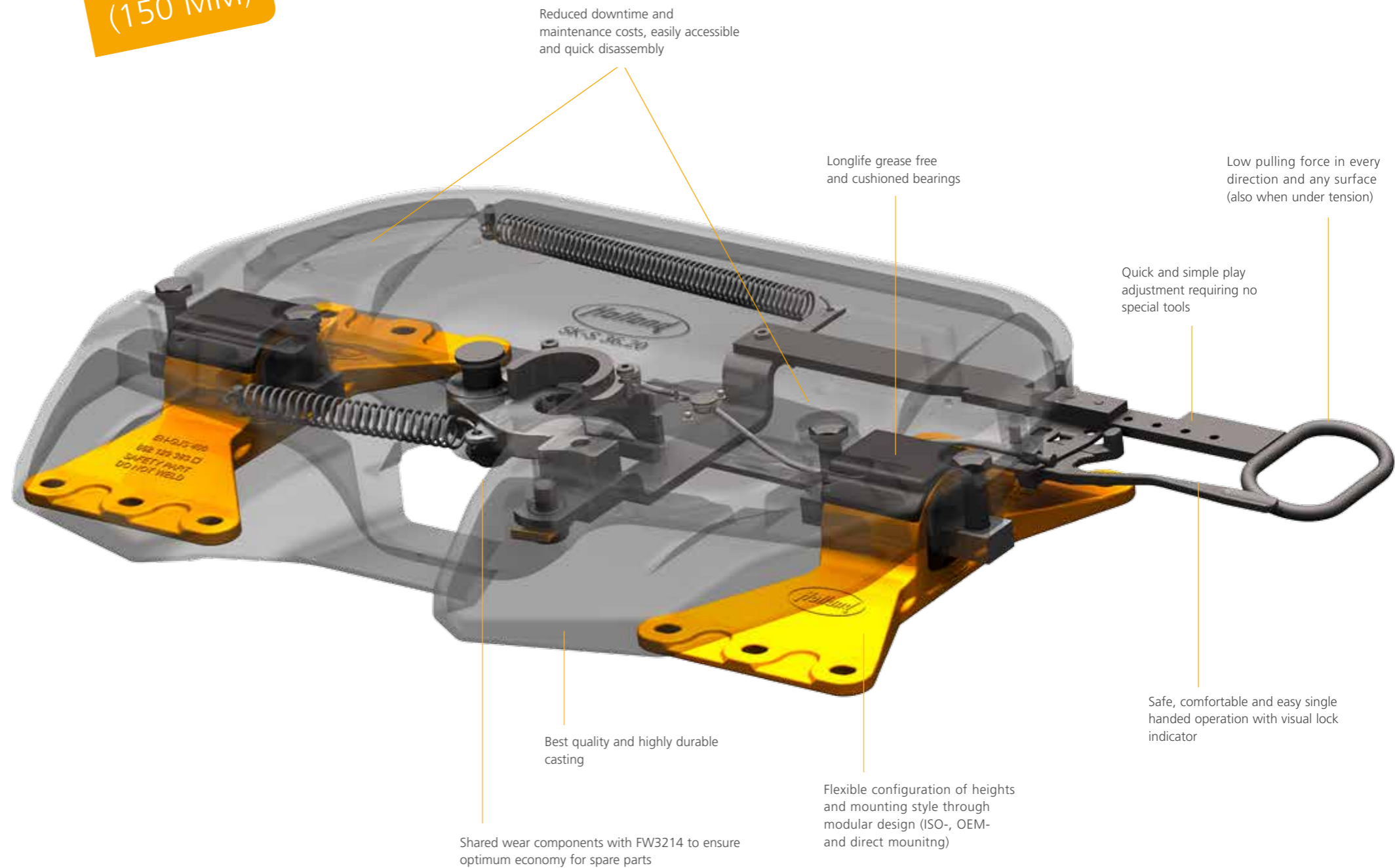


**Latch raised –**  
Fifth Wheel locked and secured = **OK**



**Latch lowered –**  
Fifth Wheel open = **DANGER**

LIGHTWEIGHT  
**117 KG**  
(150 MM)



Reduced downtime and maintenance costs, easily accessible and quick disassembly

Longlife grease free and cushioned bearings

Low pulling force in every direction and any surface (also when under tension)

Quick and simple play adjustment requiring no special tools

Safe, comfortable and easy single handed operation with visual lock indicator

Best quality and highly durable casting

Shared wear components with FW3214 to ensure optimum economy for spare parts

Flexible configuration of heights and mounting style through modular design (ISO-, OEM- and direct mounting)

# SK-S 36.20 NoLube WITH GREASE FREE NoLube TECHNOLOGY



**NoLube is short for "no lubrication" and means "no lubricating grease". The specially designed NoLube wear plates really do not require greasing any more.**

The same goes for the NoLube locking mechanism components, which in the past had to be greased. The bearing inserts between the fifth wheel plate and the mounting brackets remain absolutely grease-free, too.

There is no question about it: Driving without grease does not only make sense ecologically but, in the long run, is also more favourable economically.

## THE GREAT BENEFIT

No need to purchase, stock or the requirement to grease from now on.  
No other comparable fifth-wheels, for example those with a central lubricating system underneath the fifth-wheel plate, are able to offer you such benefits in this form.

**Overall weight:** 117 kg (total height 150 mm)  
**Imposed load:** 20t  
**D-value:** 152 kN  
**Type approved to:** E1 55R-01 0218

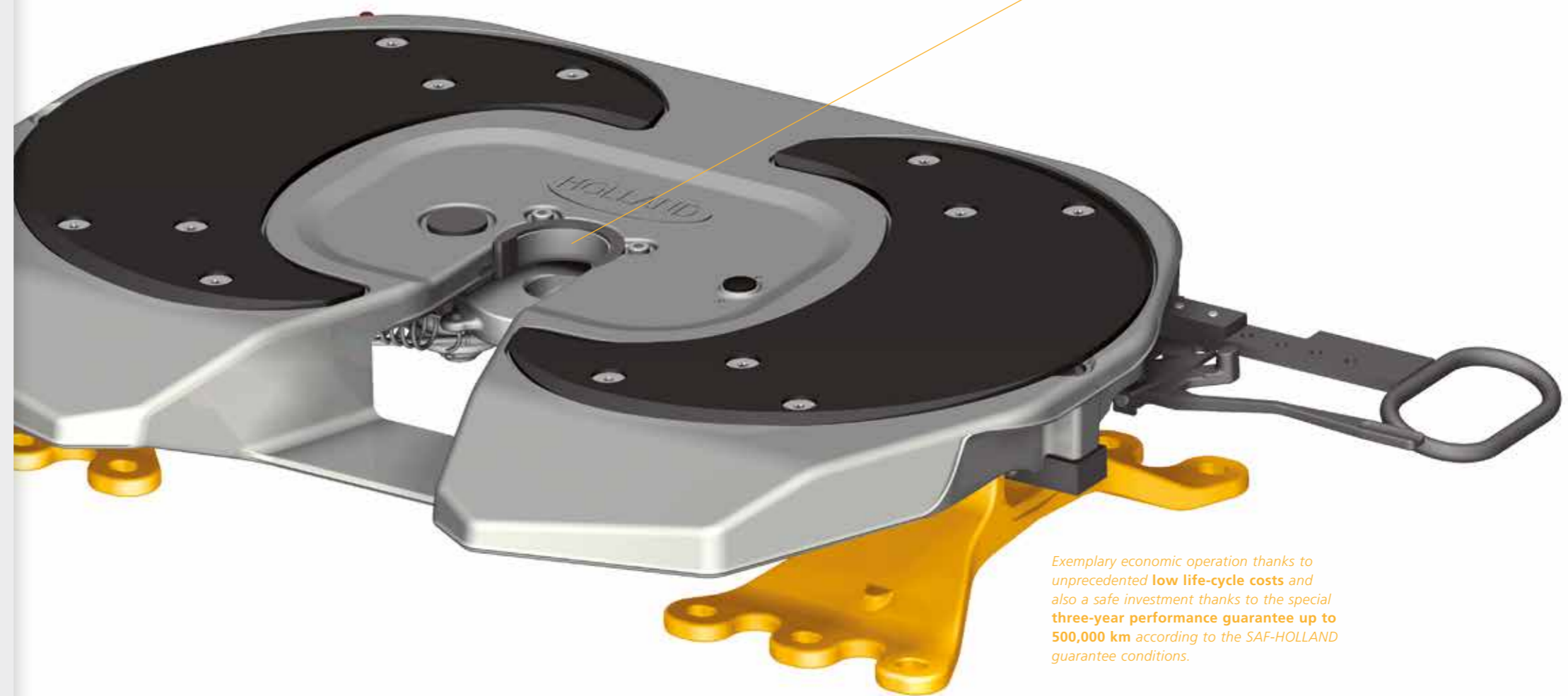
**GREASE  
FREE**



## SPECIAL LOCKING SYSTEM WITH SPECIFIC BENEFITS

**1. Wear ring:** designed as a polymer injection moulding produced in a single mould, the 2 component wear ring offers the optimum combination of low friction, wear resistance and strength.

**2. Coupler Jaw:** manufactured from a heat treated steel forging and treated with a robust low friction coating.



*Exemplary economic operation thanks to unprecedented low life-cycle costs and also a safe investment thanks to the special three-year performance guarantee up to 500,000 km according to the SAF-HOLLAND guarantee conditions.*

# SK-S 36.20 H (HUB) HEIGHT ADJUSTABLE FIFTH WHEEL

The dual-height fifthwheel is designed for volume transportation with 2-axle low liner tractors and MEGA-trailers. The adjustable height of the fifth wheel means the low liner tractor can also be used for standard trailers.

## TECHNICAL SPECIFICATIONS:

- Movement around lateral axis at basic height 6°
- Operation: adjustable (to max. 8 bar) in unhitched state by tractor's compressed air system
- Reduction of fifth wheel lead at (lift heights):  
11 mm (267)/24 mm (317)/34 mm (367)

Overall height: 167 to 367 mm  
Imposed load: 15t  
D-value: 329 to 336 kg  
Weight:  
Type Approval No.: E1 55R-01 1381

## OVERALL HEIGHTS:



Lowered position  
Overall height: 167 mm



Stroke: 100 mm  
Overall raised height: 267 mm



Stroke: 150 mm  
Overall raised height: 317 mm

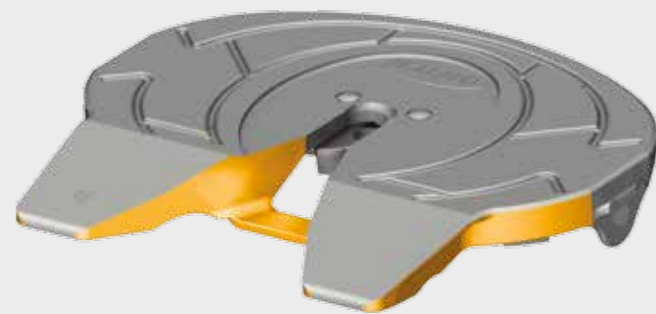


Stroke: 200 mm  
Overall raised height: 367 mm





# FW3510-TR SERIE FOR TERMINAL TRACTORS



The FW3510-TR with air operation is a special development by HOLLAND and is perfectly tuned for heavy duty applications using terminal tractor units.

This fifth wheel is thus cast from particularly high-quality steel. The components are also designed for increased vertical loads and a very long service life.

The HOLLAND FW3510-TR is also optionally available with an additional manual lock for trailer transport on public roads.

## Correct Couple

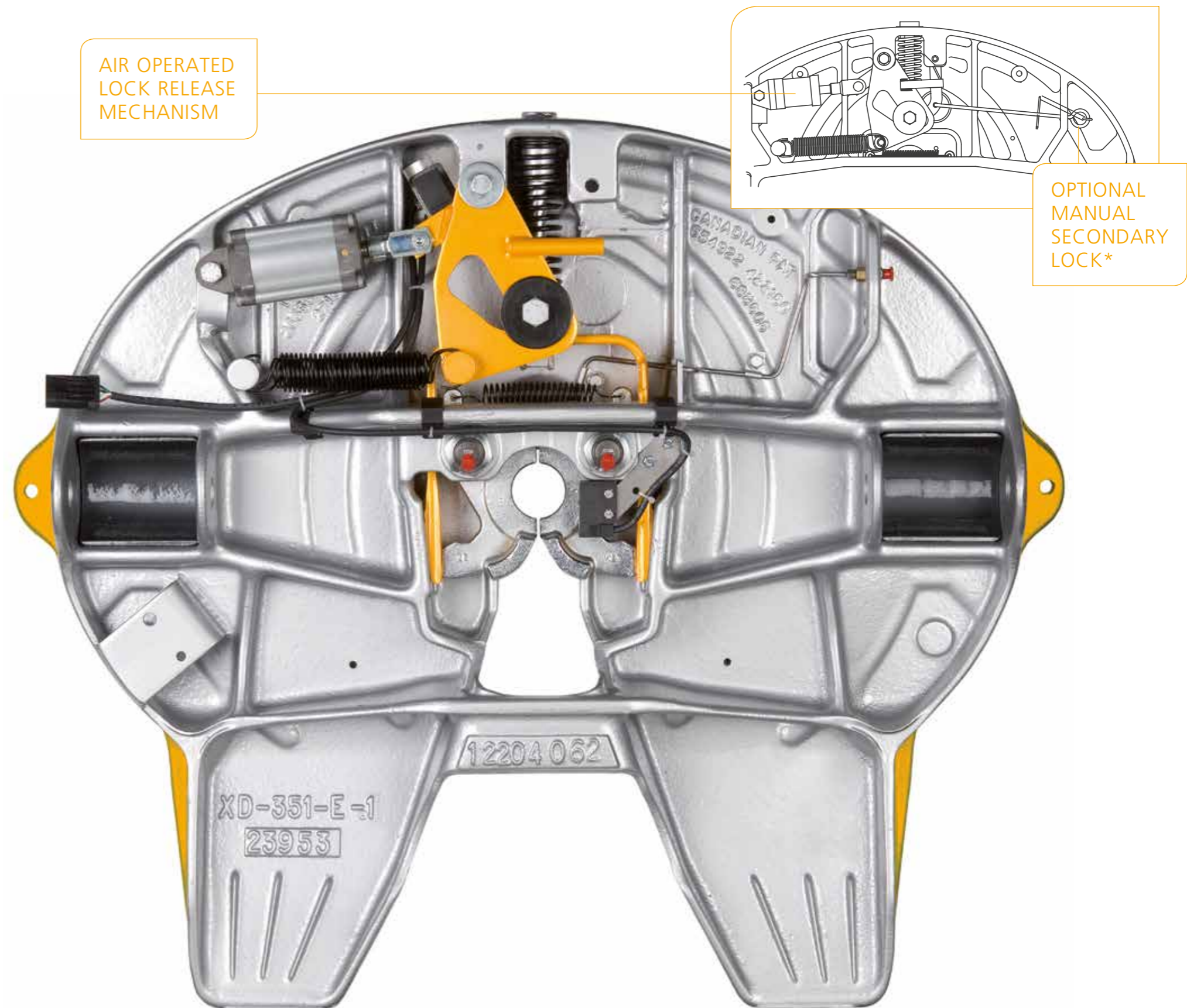


## Incorrect Couple



### Available with Electronic Lock Indicating Sensors

Drivers can effectively manage the coupling process from inside the cab as a "back up" to visual inspection and pull test locking procedures. In addition, it can reduce the potential for improper locking, component damage and downtime.



## SPECIFICATIONS – standard version

Part number	Weight	GCW	Vertical load	Max. speed
FW3510-TR	120 kg	100,000 kg	36,000 kg	35 km/h
FW3510-TR-EL	120 kg	100,000 kg	36,000 kg	35 km/h

(EL- Version with electronic lock sensor)

\* necessary for use on the public highway

## SPECIFICATIONS – with optional manual secondary lock

Part number	Weight	Vertical load	D-value
FW3510-TR-EG	121 kg	23,000 kg	175 kN
FW3510-TR-EG-EL	121 kg	23,000 kg	175 kN

(EL- Version with electronic lock sensor)

# FW3214-W

## FRAME-INTEGRATED FIFTH WHEEL

SAF-HOLLAND developed the first 14t frame-integrated fifth wheel in close cooperation with Mercedes-Benz Trucks. With coupling plates from Georg Fischer made from spheroidal graphite cast iron, it offers a complete solution for Mercedes-Benz Actros and Antos that is both weight-optimised and load-optimised.

The frame-integrated fifth wheel is found directly in the vehicle frame and is tuned optimally to the tractor unit, meaning it achieves a significantly higher payload potential compared to similar products.

### BENEFITS AT A GLANCE:

- Low-maintenance and particularly easy to use thanks to practical single-handed operation
- Added payload potential thanks to direct integration in the vehicle frame
- Load-optimised and wear-optimised coupling plates from Georg Fischer in spheroidal graphite cast iron

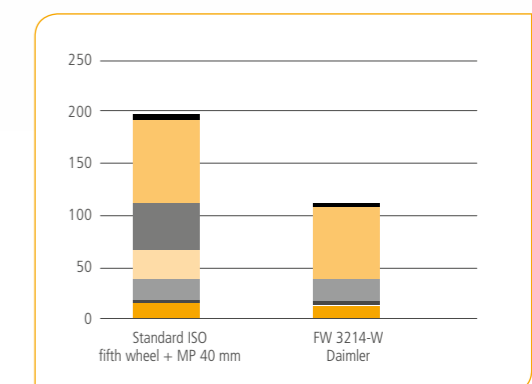
### VEHICLE SPECIFICATIONS

- For Antos and Actros 4x2 tractor units with the following specifications:
- Wheelbase 3,700 mm with coupling point 600 mm
  - Daimler order code **Q4Y** (fifth wheel, integrated, SAF SK-S 32.14)



Clear weight-optimised: The integration of the fifth wheel in the vehicle frame significantly reduces the tare weight of the tractor unit.

### SYSTEM WEIGHT IN KG



■ Lock | 
 ■ Bearing | 
 ■ Bearing blocks | 
 ■ Auxiliary bracket | 
 ■ Mounting plate 40 | 
 ■ Coupling plate | 
 ■ Fastening / mounting

# THE KINGPIN – ENSURING A SAFE CONNECTION

Together with the fifth wheel, the kingpin is one of the most important vehicle components.

The safe connection between the fifth wheel and kingpin is decisive for trouble-free operation. It is of crucial importance

being able to rely on tractor/trailer connection remaining safe and in flawless condition during every trip. A very precisely integrated “system-based” approach ensures that the SAF kingpins function flawlessly at all times. Rigorous checks during production guarantee top quality.

We monitor each individual production stage intensively for all kingpins, from steel-making through to the forging and ultimately the delivery.

All forged components have to meet strict requirements during machining and are thus able to meet the highest standards – always with outstanding precision and complete reliability.

2" SAF KINGPIN 50S15



**D-value:** 165 kN  
**Semi-trailer skid-plate thickness:** 6/8/10/12 mm  
**Approval mark:** E1 55R-01 2289

Semi-trailer skid-plate thickness	SAF kingpin mounted	Individual components		Attachment
T	Kingpin complete	Flange	Pin	Hexagon bolts (8 pcs.)
6 mm	1030 30 000005 0	2031 10 000005 0	2108 30 000002 0	2088 10 000005 0
8 mm	1030 30 000004 0	2031 10 000004 0		
10 mm	1030 30 000003 0	2031 10 000003 0		
12 mm	1030 30 000002 0	2031 10 000002 0		

3.5" SAF KINGPIN 90S15



**D-value:** 165 kN  
**Semi-trailer skid-plate thickness:** 8/10/12 mm  
**Approval mark:** E1 55R-01 2371

Semi-trailer skid-plate thickness	SAF kingpin mounted	Individual components		Attachment
T	Kingpin complete	Flange	Pin	Hexagon bolts (8 pcs.)
8 mm	1030 30 000011 0	2031 10 000004 0	2108 30 000005 0	2088 10 000005 0
10 mm	1030 30 000010 0	2031 10 000003 0		
12 mm	1030 30 000009 0	2031 10 000002 0		

2" SAF KINGPIN 50S18



**D-value:** 165 kN  
**Semi-trailer skid-plate thickness:** 16 mm  
**Approval mark:** E1 55R-01 2418

Semi-trailer skid-plate thickness	SAF kingpin mounted	Individual components		Attachment
T	Kingpin complete	Flange	Pin	Hexagon bolts (8 pcs.)
16 mm	1030 30 000012 0	2031 10 000009 0	2108 30 000006 0	2088 10 000006 0

3.5" SAF KINGPIN 90S18



**D-value:** 320 kN  
**Semi-trailer skid-plate thickness:** 16 mm  
**Approval mark:** E1 55R-01 2426

Semi-trailer skid-plate thickness	SAF kingpin mounted	Individual components		Attachment
T	Kingpin complete	Flange	Pin	Hexagon bolts (8 pcs.)
16 mm	1030 30 000014 0	2031 10 000009 0	2108 30 000007 0	2088 10 000006 0

# SLIDERS AND ADDITIONAL OPTIONS

SK-V 20

18T IMPOSED LOAD

FOR OPTIMAL  
UTILISATION OF  
PERMISSABLE  
AXLE LOADS AND  
VEHICLE LENGTH

### Slider with 18t imposed load

- Direct mounting on vehicle frame
- High rigidity – lightweight
- Extra low overall height
- 14 selectable coupling points
- Total slider travel of 525 mm
- Available in 2 different widths
- One person/single-handed operation, optional pneumatic version available
- Approved for forced steering
- Mounting hole pattern according to DIN 74081, DIN 74084 and ISO 3842



Imposed load: 18,000 kg Overall height: 35 mm  
D-value: 135 kN ECE test no.: E11 55R-01 5482

ILS

20T IMPOSED LOAD



Imposed load: 20,000 kg Overall heights: 180, 200, 225 mm  
D-value: 150 kN ECE test no.: E11 55R-01 0056

### Slider with 20t imposed load

- Available for all standard Holland fifth wheels FW3510
- Standard slider travel of 610 and 1220 mm
- Other versions with 915 or 1555 mm slider travel are available on request
- Standard air-operation for all types
- Fifth wheel position can be adjusted in steps of 50.8 mm spacing
- Pre-drilled hole patterns for direct mounting on vehicle chassis

SK-V 22

22T IMPOSED LOAD



Imposed load: 22,000 kg Overall height: 45 mm  
D-value: 162.4 kN ECE test no.: E11 55R-01 0386

### Slider with 22t imposed load

- Easy mounting due to different versions of mounting kits
- One person/single-handed operation
- Pre-selectable coupling point
- Automatic locking, free of play, self adjusting
- 7 selectable coupling points
- Total slider travel 630 mm
- 2 designs for frame width of up to 970 mm
- Approved for forced steering

SK-V 36

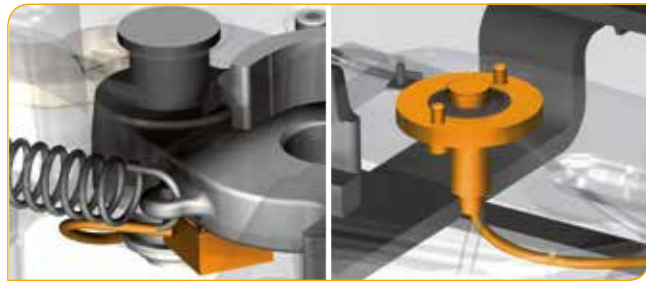
36T IMPOSED LOAD



Imposed load: 36,000 kg Overall height: 57 mm  
D-value: 260 kN ECE test no.: E11 55R-01 7609

### Slider with 36t imposed load

- For heavy duty fifth wheels with 150 and 190 mm overall height
- Mounting hole pattern according to DIN 74081, DIN 74084 and ISO 3842
- High rigidity – lightweight
- Low overall height of 57 mm
- Frame width 760-800 mm
- Dimensions 1400-850 mm
- Single-handed operation and 9 selectable coupling points
- Total slider travel 800 mm
- Approved for forced steering



**The Safety Sensor System for the SK-S 36.20 fifth wheel REMote CONTROLled Safety System**

- More safety due to visual and acoustic indication in cockpit
- More convenience due to monitoring of entire coupling process from the cabin
- Available in OEM versions ex works with vehicles from Mercedes-Benz, Volvo and Renault.

The sensors on the primary lock and the secondary lock permanently monitor the safe, correct state of the coupling. Another sensor monitors the distance between the semi-trailer skid-plate and coupling and guarantees the correct entry height during the coupling procedure.



GREASE CARTRIDGE FOR SK-S 36.20 W



**Automatic single point long term dispenser**

- No manual lubrication of lock mechanism required
- TÜV approved
- Contents: 125 ml
- Operating system: Hydrogen gas formation cell
- Operating pressure max. 3 bar
- Setting: continuous 1-12 months
- Average period of use approx. 6 months
- Operating temperature: -20°C up to +55°C
- Recommended storage temperature of 20°C ± 5°C

RECOLUBE AUTOMATIC LUBRICATION PUMP WITH SPECIAL HIGH PERFORMANCE SKX 372 RECOLUBE GREASE

**BENEFITS OF THE LUBRICATION PUMP**

- Eliminates regular greasing by hand
- **Environmentally friendly, optimal grease quantity** through automatic dosing
- **High performance pump** ensures continued lubrication also under low temperatures and difficult conditions
- Grease reservoir sufficient for **1 year operation** or **100,000 km**
- **Re-fillable through grease nipple** using standard grease gun cartridge
- **Function and level monitoring** in vehicle display
- Compatible with vehicles manufactured from 01.04.2017 and equipped with electronic control unit version ZBR E8



**RECOLUBE POWER SKX 372**

This high-performance lubricant is ideal for the automatic lubrication of fifth wheels – both at very low and very high temperatures. The special lubricant is capable of withstanding extreme loads, is exceptionally resistant to water and at the same time offers excellent protection against corrosion.



# D-VALUE CALCULATION

## GENERAL INFORMATION

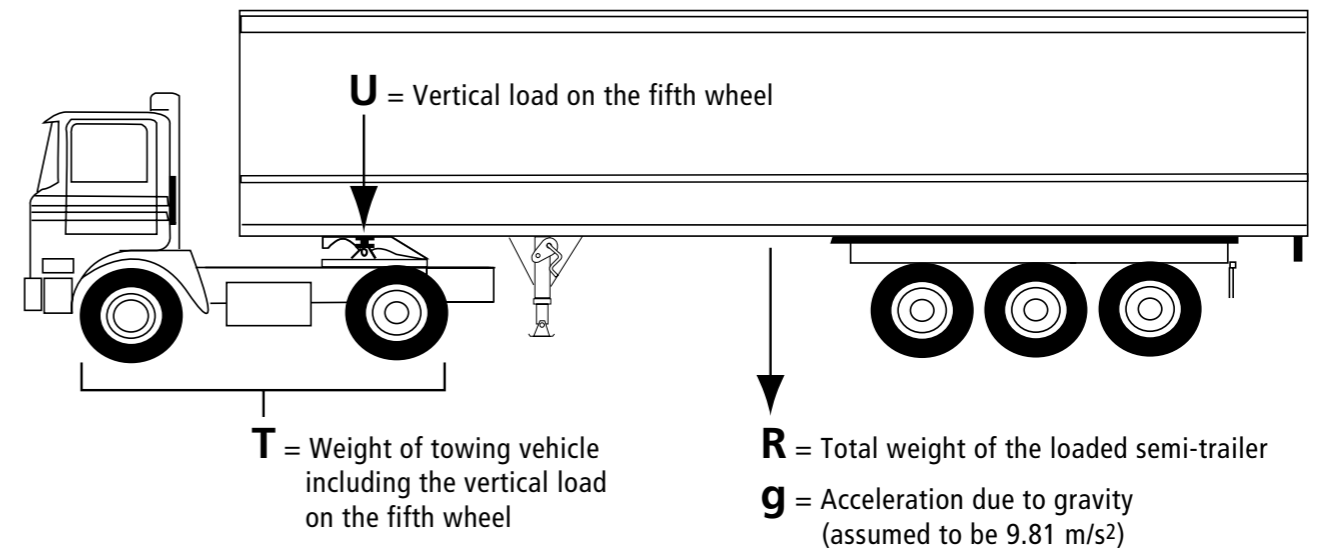
All fifth wheels and kingpins, tested and approved under 94/20/EG and ECE-R55 regulations are given a D-value rating as an indication of the maximum horizontal force permitted between the towing vehicle and trailer.

In order to confirm the suitability of a particular fifth wheel or kingpin for a given tractor/trailer combination it is necessary to carry out a D-value calculation.

## FORMULA

The D-value formula for a tractor and semi-trailer combination is as follows:

$$D = g \times \frac{0.6 \times T \times R}{T + R - U} \text{ (kN)}$$



## DEFINITION

The „D-value“ is defined as the theoretical reference force for the horizontal force between towing vehicle and trailer. The D-value is taken as the basis for horizontal loads in the dynamic tests for all automatic coupling devices between a towing vehicle and trailer.

## EXAMPLE CALCULATION

**T = 17** (Tractor weight 7t plus vertical load 10t), **g = 9.81**  
**R = 33** (10t imposed on fifth wheel and 23t on rear bogie), **U = 10**

$$D = 9.81 \times \frac{0.6 \times 17 \times 33}{17 + 33 - 10} \text{ (kN)} \quad \text{D-value} = 82.55 \text{ kN}$$



TRAILER AXLES AND  
SUSPENSION SYSTEMS



COUPLING AND LIFTING  
TECHNOLOGIES



SUSPENSIONS FOR  
TRUCKS AND BUSES



SUSPENSIONS AND COMPONENTS  
FOR COMMERCIAL VEHICLES



V. ORLANDI

COUPLING AND LIFTING  
TECHNOLOGIES



TRAILER AXLES AND  
SUSPENSIONS SYSTEMS