

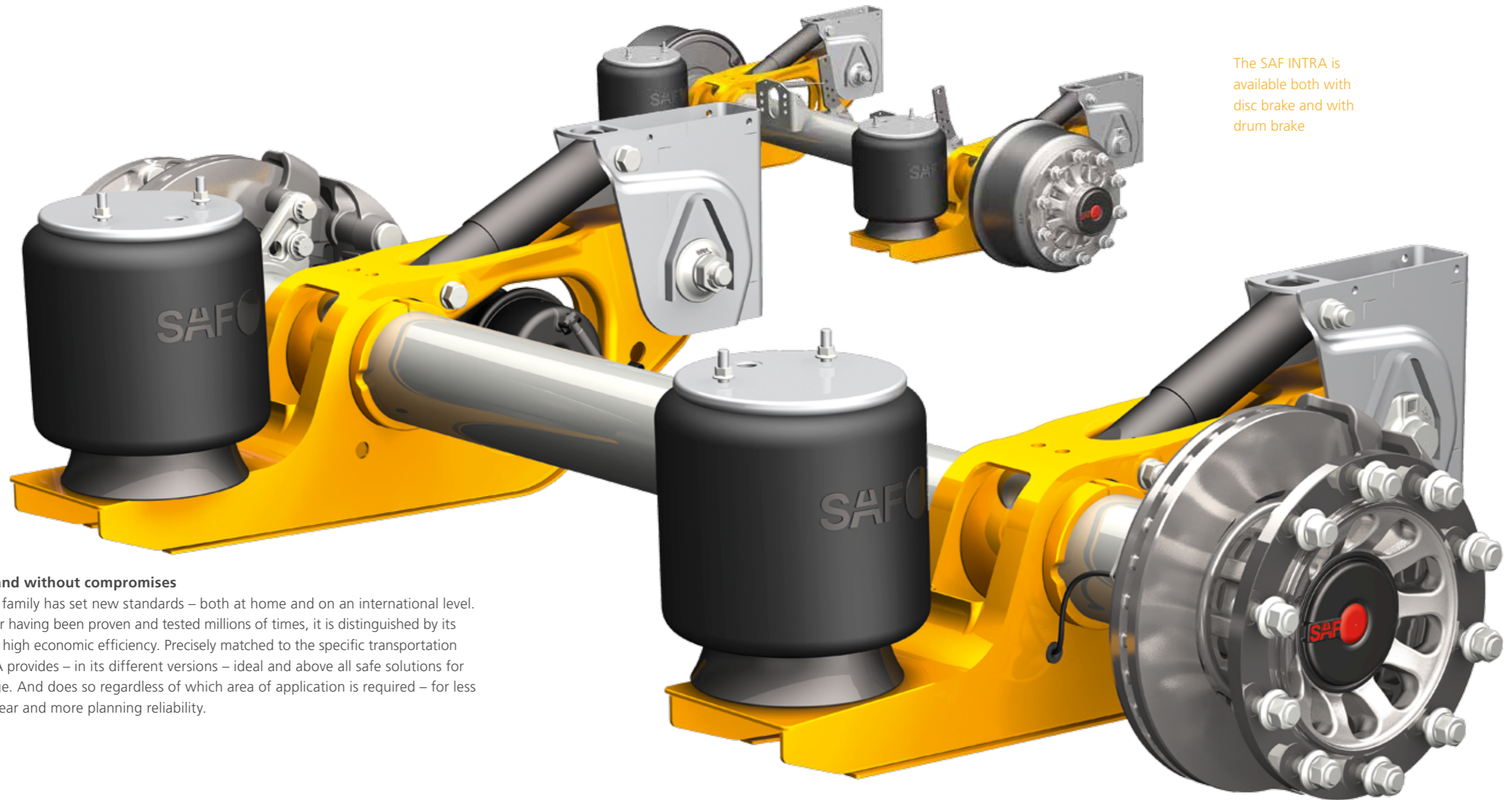


SAF ● INTRA

SAF INTRADISC *PLUS INTEGRAL*
SAF INTRADISC AIRVENT
SAF INTRADRUM
SAF INTRA CD

SAF INTRA CD TRAK
SAF INTRA MEGA
SAF INTRA SELF-STEERING AXLE
SAF INTRA PC PREMIUM COATED

THE INTRA FAMILY



The SAF INTRA is available both with disc brake and with drum brake

Efficient and without compromises

The INTRA family has set new standards – both at home and on an international level. Today, after having been proven and tested millions of times, it is distinguished by its particularly high economic efficiency. Precisely matched to the specific transportation task, INTRA provides – in its different versions – ideal and above all safe solutions for the 9t range. And does so regardless of which area of application is required – for less wear and tear and more planning reliability.

ONE UNIT – MANY VARIANTS AND APPLICATIONS ...

Especially protected due to its position in the functional suspension arm: the shock absorber



Long-term conservation of value and functional safety through sophisticated cathodic dip coating with optimum corrosion protection down to the last detail

The patented SAFE-GUARD-DESIGN of the functional suspension arm protects the brake cylinder reliably from damage

Functional suspension arm and axle tube form an inseparable and maintenance-free unit. This eliminates the need for U-bolts, clamping plates and nuts. The entire design is extremely robust and yet very lightweight

THE INTRA FAMILY AND ITS AREAS OF APPLICATION AT A GLANCE

P.10



SAF INTRADISC *PLUS INTEGRAL*

Especially in the trailer area: The SAF INTRADISC *plus INTEGRAL* has a two-piece brake disc that is one of a kind worldwide. This design principle protects the material and prolongs its service life.

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SAF INTRADISC AIRVENT

With the SAF INTRADISC AIRVENT, internal AirVent ventilation channels cool the brake disc down avoiding the heat accumulation. In addition, they support purposefully a low temperature management in the overall system.

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SAF INTRADRUM

The tried-and-tested SAF INTRA with drum brake and INTRADRUM technology is a winner in virtually any transport situation, with special functional reliability and unprecedented economic efficiency.

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SAF INTRA CD

Systematically optimised for specific transport needs – the SAF INTRA CD is especially suitable for particularly demanding traffic routes.

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SAF INTRA CD TRAK

WINNER OF THE TRAILER INNOVATION AWARD 2017: The SAF INTRA CD TRAK supports the truck on inclines and difficult terrain, using a hydraulically driven motor – simply by pressing a button.

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SAF INTRA MEGA

More load capacity and a lighter suspension – the SAF INTRA MEGA is ideal for volume semi-trailers and trailers.

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SAF INTRA SELF-STEERING AXLE

Developed for special requirements of delivery vehicles, the SAF INTRA self-steering axle provides significant weight optimisation and more flexibility on routes with tight corners.

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SAF INTRA PC PREMIUM COATED

SAF-HOLLAND was the first manufacturer to offer a 9t axle protected by Zinc metal spraying with a great success. Now we have gone a step further and have further improved the corrosion resistance with our new PREMIUM COATED process.

SAF INTRADISC PLUS INTEGRAL

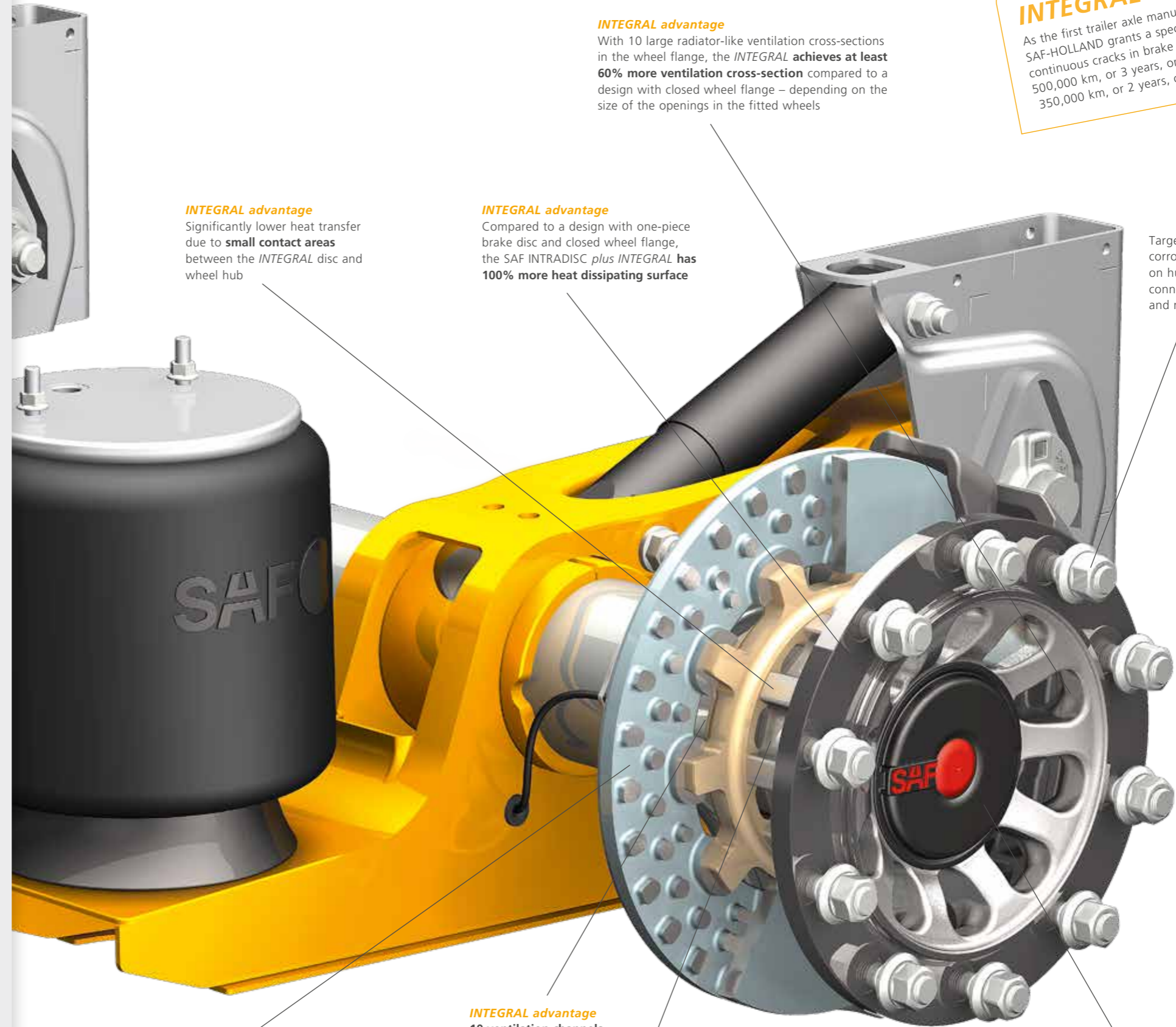
Proven over decades in the trailer area: The special design principle of the SAF INTRADISC plus INTEGRAL protects the material and significantly improves the service life of the brake disc.

Unlike conventional brake discs, the SAF INTEGRAL is a two-piece brake disc. It is manufactured in composite casting from different, specially matched materials and thus achieves a significantly higher economic efficiency in the trailer area.

The unique design principle prolongs the service life of the pads and the disc and, at the same time, achieves:

- more km – less wear
- more planning reliability
- more efficiency
- more economic efficiency

INTEGRAL GUARANTEE
As the first trailer axle manufacturer in the world, SAF-HOLLAND grants a special guarantee against continuous cracks in brake discs in trailers. 500,000 km, or 3 years, on the 22.5" disc. 350,000 km, or 2 years, on the 19.5" disc.



INTEGRAL advantage
With 10 large radiator-like ventilation cross-sections in the wheel flange, the INTEGRAL achieves at least **60% more ventilation cross-section** compared to a design with closed wheel flange – depending on the size of the openings in the fitted wheels

INTEGRAL advantage
Significantly lower heat transfer due to **small contact areas** between the INTEGRAL disc and wheel hub

INTEGRAL advantage
Compared to a design with one-piece brake disc and closed wheel flange, the SAF INTRADISC plus INTEGRAL has **100% more heat dissipating surface**

Targeted long-term corrosion protection also on hub caps and screw connections, wheel bolts and nuts

SAF-HOLLAND PATENT



The INTEGRAL disc is cast onto a splined adapter ring and bolted to the wheel hub. The connection between the adapter ring and the brake disc has absolutely no play – without the two parts being fused together. This is the advantage: By composite casting of disc and adapter, the disc can expand radially and contract again during cooling down.

The dreaded hot spots in conventional brake discs, which can result in stresses in the material and possible cracks, up to the failure of the disc, are avoided – and: Since the braking surfaces stay absolutely flat in every operating state, the pads last far longer.

INTEGRAL advantage
Conical ventilation channels in the brake disc for maximum interior ventilation

INTEGRAL advantage
10 ventilation channels under the brake disc

INTEGRAL advantage
10 additional ventilation channels under the adapter ring

The SAF hub unit is a compact hub and bearings unit. It is fully factory-adjusted and encapsulated. The SAF hub unit is maintenance-free

SAF INTRADISC AIRVENT



The 9t air suspension system with optimised disc brake technology and an exemplary price-performance ratio.

The SAF INTRADISC AirVent raises the bar again in terms of economic efficiency and reliability in the area of 9t axle systems with disc brakes. The core of the system is the SAF AirVent wheel end. It is equipped with an asymmetrically cast, specially alloyed 22.5" or 19.5" disc that has been tried and tested over many years. Particularly efficient and safe, the SAF INTRADISC AirVent makes the transport business more profitable again.



The patented SAF SAFE-GUARD-DESIGN of the functional suspension arm reliably protects the brake cylinder from damage.



Asymmetric air duct design

The specific shape of the flange disc made of a special alloy ensures not only exact concentricity under all driving conditions – it also reduces the umbrella effect and therefore prolongs the service life of the brake disc and pads

Optimised friction pairing
for an efficient stopping and longer service life of disc and pads

Brake disc attachment

The fitting on a pitch circle Ø 215 mm for absolutely safe brake disc installation: Closed blind holes instead of open through holes design specifically to avoid any corrosion on the threads

Monobloc wheel hub
in one piece and specifically weight-optimised

Wheel hub coating

The end-to-end cathodic dip coating ensures optimal corrosion protection and long-term conservation of value

Internal AirVent ventilation channels

cool the brake disc, avoid heat accumulation and support purposefully a low temperature management in the overall system.

Large compact wheel bearing unit and special long-life seals

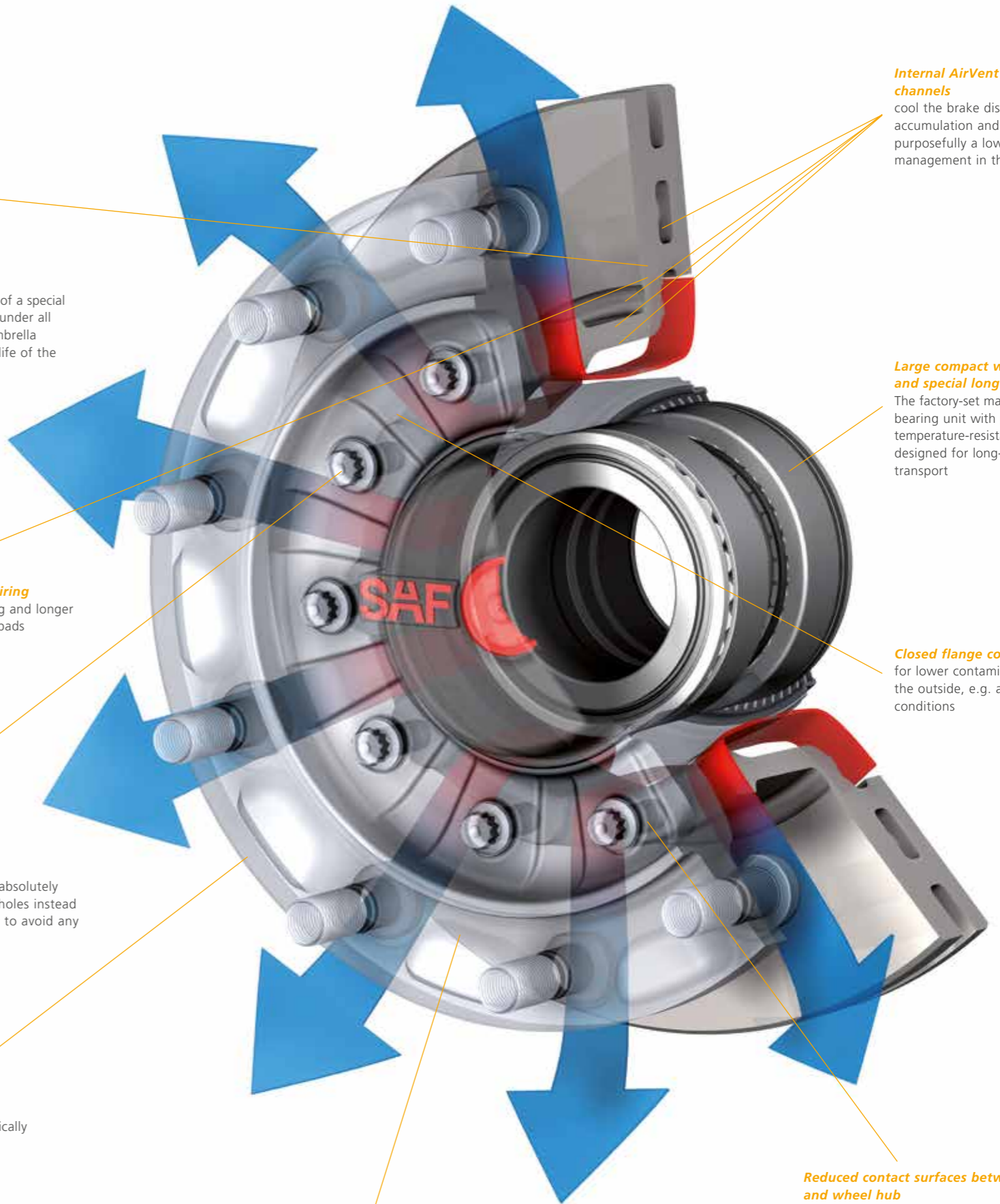
The factory-set maintenance-free wheel bearing unit with particularly high-value temperature-resistant components is designed for long-term use in demanding transport

Closed flange cover

for lower contamination from the outside, e.g. at extreme road conditions

Reduced contact surfaces between disc and wheel hub

reduce the heat transfer from the disc to the hub unit and contribute to a thermal discharge of the complete wheel end

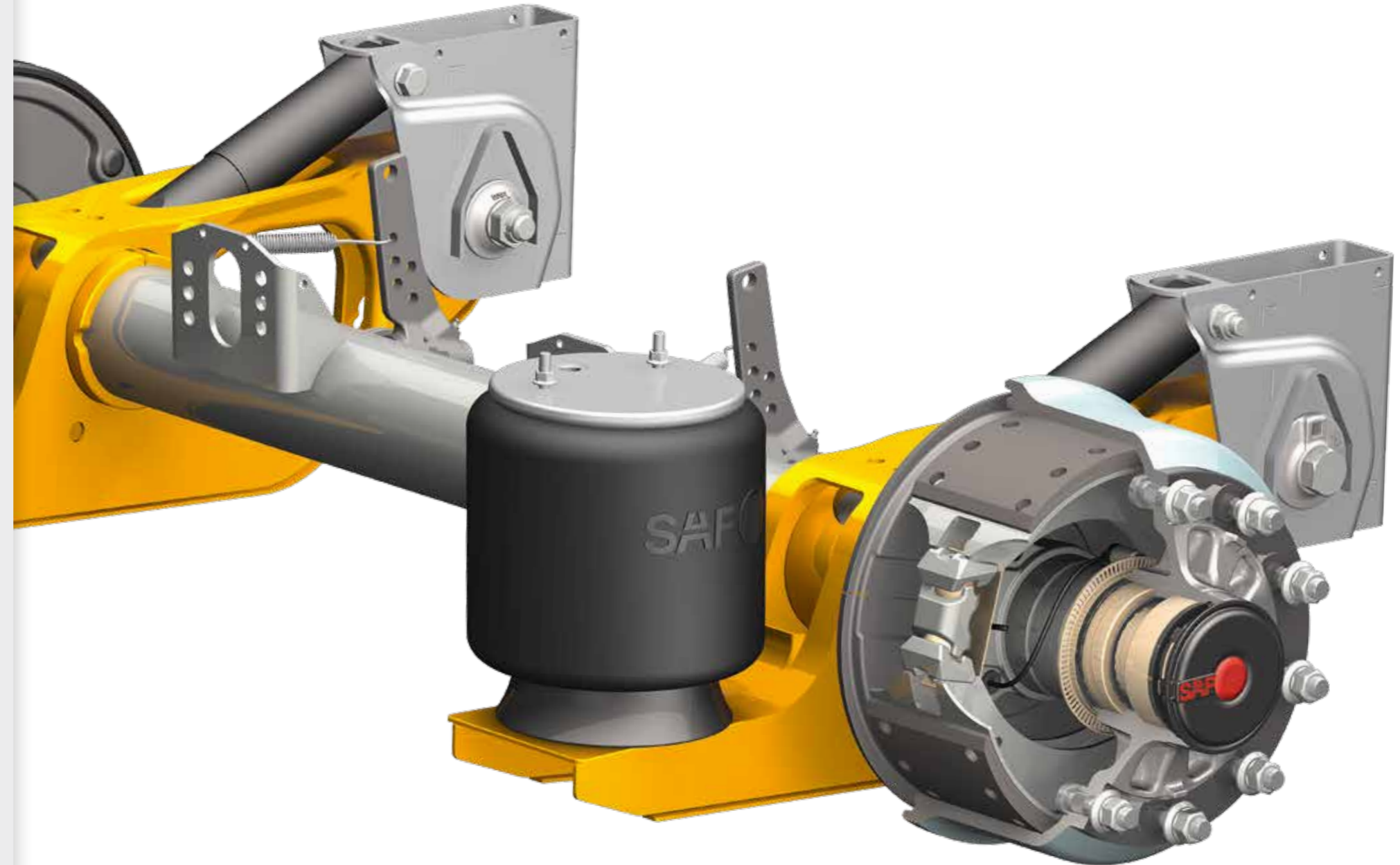


SAF INTRADRUM



Perfectly thought-out: The SAF INTRA drum brake combines proven components into a successful system.

Efficient, profitable and virtually maintenance-free – the SAF INTRA-DRUM is a winner with its powerful and precisely matched components and guarantees planning reliability right from the first kilometre.



BENEFITS AT A GLANCE

Improved corrosion protection

by **galvanising and powder coating**, the **cover plate** is even better protected. In order to increase the corrosion protection of the INTRADRUM even more, the **coating thickness on the wheel hub has also been doubled**.

The use of steel-brass S-cam bushings

allows for more accurate manufacturing tolerances compared to synthetic bearings, so that **they can be installed with almost no play**, less **vibration** and a **better brake performance**. Noise generation is also significantly reduced.

SAF brake shoes

are **asymmetrically shaped by computer modelling** and are subject to strict production control on an ongoing basis. The **optimised brake shoe geometry** guarantees improved distribution of force between brake pad and brake shoe, **improving brake performance**.



Spherical bearing

The brake shoes on the SAF INTRADRUM are mounted around a spherical head. Thanks to their special geometry, the shoes can move in all directions. This will cause the force to be more evenly distributed across the linings, and a longer service life is guaranteed.



Precise cam roller guide

The precision-machined S-cams precisely control the movement of the brake shoes and the contact pressure, so optimal braking action is ensured.



Replacing brake shoes in seconds

The change is quickly done with a screwdriver and only a few simple manual actions.



Fewer parts

The SAF INTRADRUM saves space in storage and considerably reduces the effort involved in maintenance and repair.

SAF INTRA CD



CUSTOM DESIGN



Specially designed for off-road use: The SAF INTRA CUSTOM DESIGN

Under the label of INTRA CD CUSTOM DESIGN, SAF-HOLLAND offers pioneering 9t air suspension systems with special product properties – purposefully optimised for specific transport requirements and challenging transport infrastructure. The label CD marks a new performance dimension reflected in the following features:

- model variant with drum brake as SAF INTRADRUM CD
- model variant with disc brake as SAF INTRADISC *plus INTEGRAL* CD or as SAF INTRADISC CD with AirVent wheel end

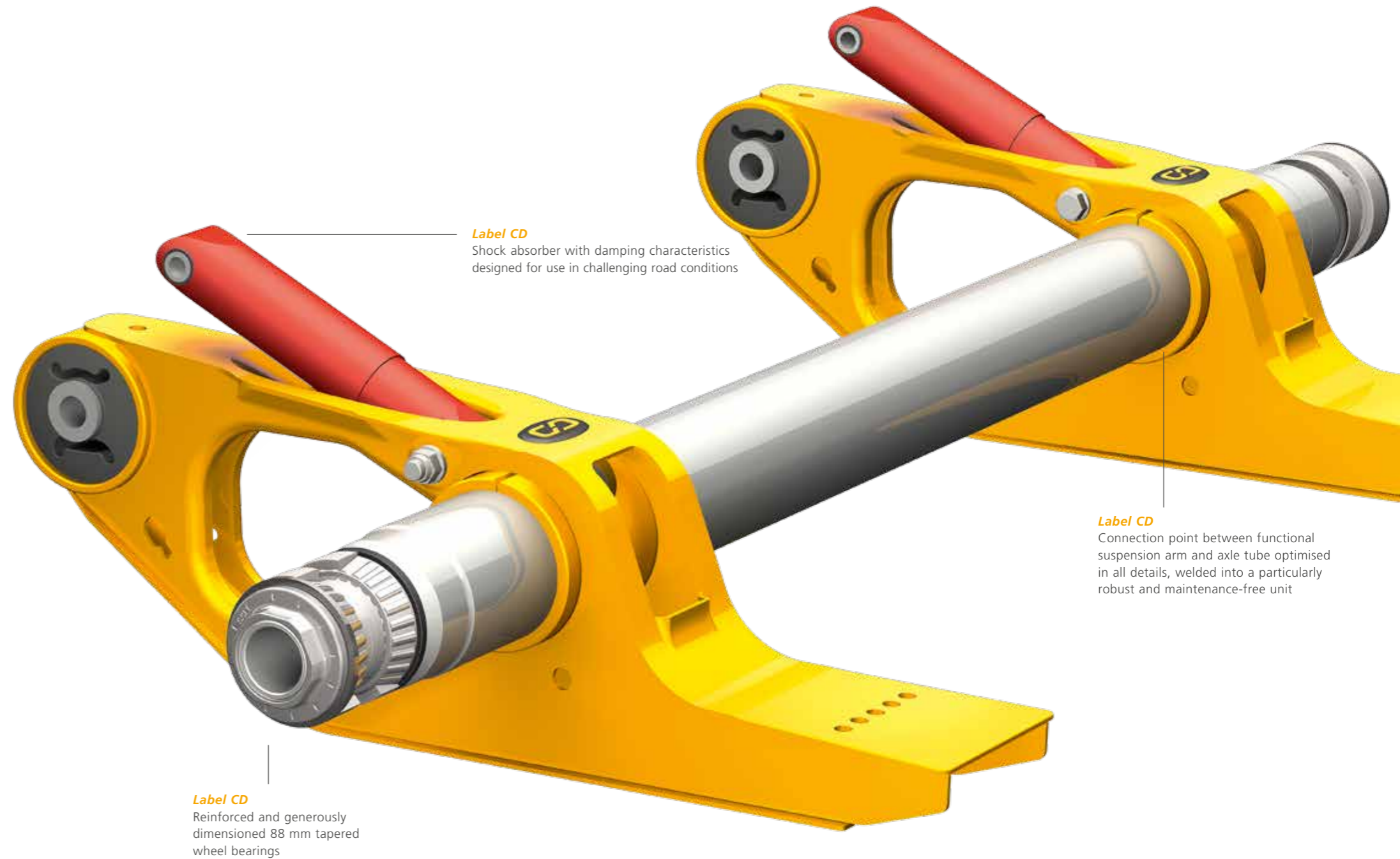
TECHNICAL DATA

SAF INTRADISC *plus INTEGRAL* CD

Axle load: 9t
 Track width: 2040 and 2090 (other track widths on request)
 Brakes: Disc brake optional 22.5" and 19.5"
 Offset: ET 120
 Tyres: single

SAF INTRADRUM CD

Axle load: 9t
 Track width: 2040 and 2090 (other track widths on request)
 Brakes: Drum brake 420 x 180 mm & 370 x 180 mm
 Offset: ET 0
 Tyres: single



Label CD
 Shock absorber with damping characteristics designed for use in challenging road conditions

Label CD
 Connection point between functional suspension arm and axle tube optimised in all details, welded into a particularly robust and maintenance-free unit

Label CD
 Reinforced and generously dimensioned 88 mm tapered wheel bearings

SAF INTRA CD TRAK



For the first time as standard in the trailer: The hydraulically driven SAF INTRA CD TRAK axle brings drive to the trailer – simply by pressing a button.

The new SAF INTRA CD TRAK is optimised for trailers in the 9t standard range – both **on-road** and **off-road**. Specially developed for tippers operating in the area of construction sites or landfills, **the drive axle supports the truck on inclines and difficult terrain with its integrated additional drive.**

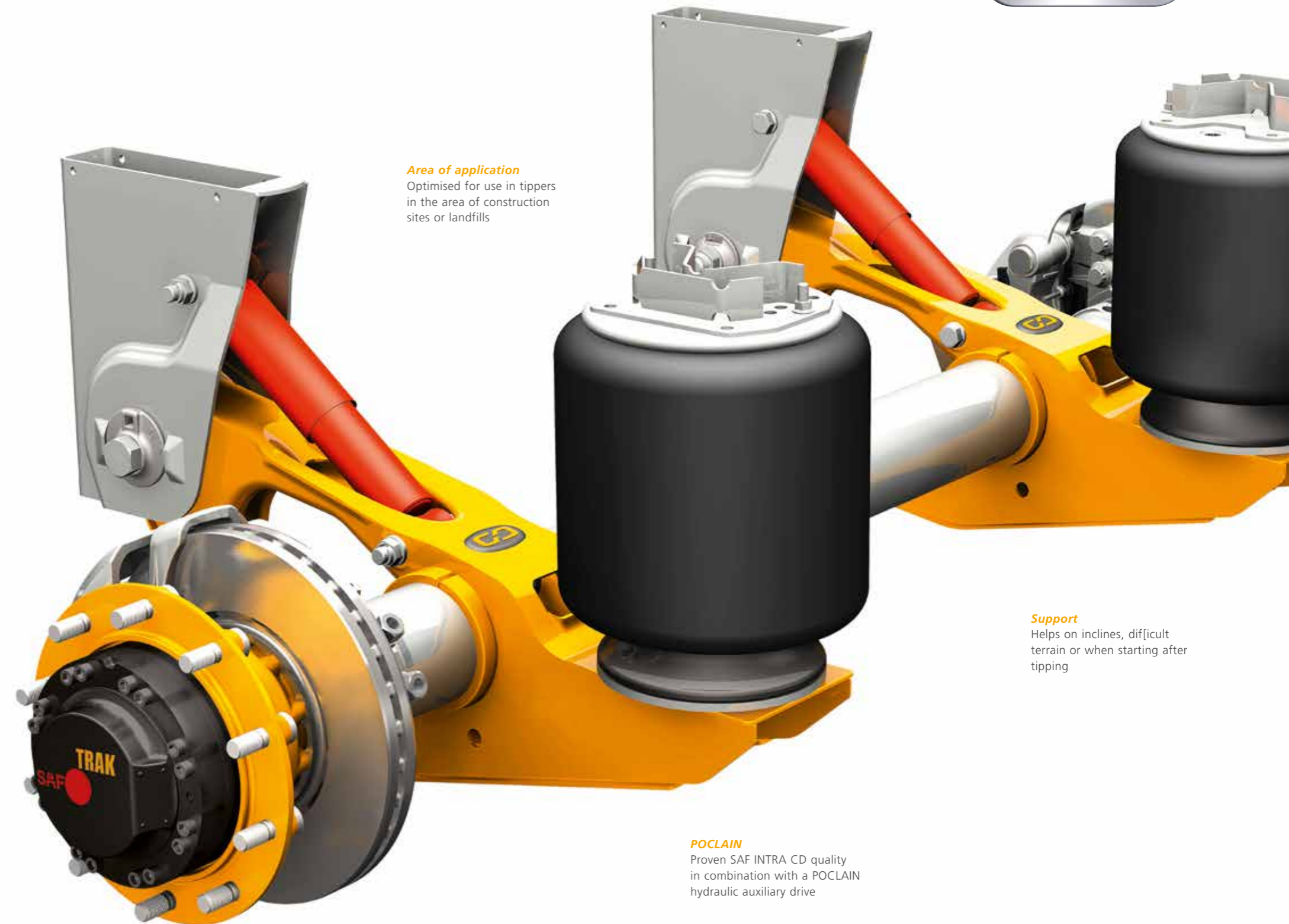
The special motor takes the required performance precisely where it is needed – right to the trailer. Here the drive axle carries the full axle load and is able to transmit complete drive torque.

The hydraulically driven motor is long-lasting and low in maintenance, thereby ensuring that the new trailer axle has an exceptionally long service life.

BENEFITS AT A GLANCE

- the supply comes via the truck's hydraulics
- the SAF INTRA TRAK can be retrofitted on existing trailers
- controlled from the cab
- high flexibility through the use of different trucks with 2-circuit hydraulics
- complete system integration with prime movers possible

WINNER OF THE
TRAILER INNOVATION
AWARD 2017



Area of application
Optimised for use in tippers in the area of construction sites or landfills

Support
Helps on inclines, difficult terrain or when starting after tipping

POCLAIN
Proven SAF INTRA CD quality in combination with a POCLAIN hydraulic auxiliary drive

SAF INTRA MEGA

The perfect system solution for volume and weight-optimised semi-trailers and trailers.

With increasing transport volume, the market share of volume-optimised semi-trailers is growing at the same time. SAF-HOLLAND has prepared itself for this development and offers, based on its modular INTRA TECHNOLOGY, a complete system solution: the MEGA of the SAF INTRADISC *plus* INTEGRAL.

A SAF system solution with all the advantages of the INTRA TECHNOLOGY:

- maintenance-free connection between the suspension arm and the axle tube
- weight from 389 kg with 19.5" SBS 1918 disc brake without brake cylinder
- weight from 398 kg with 22.5" SAF disc brake without brake cylinder
- also as a SAF self-steering axle
- also as CD CUSTOM DESIGN VERSION for special applications
- SAF-HOLLAND EXCELLENCE GUARANTEE*
- SAF-HOLLAND INTEGRAL GUARANTEE*

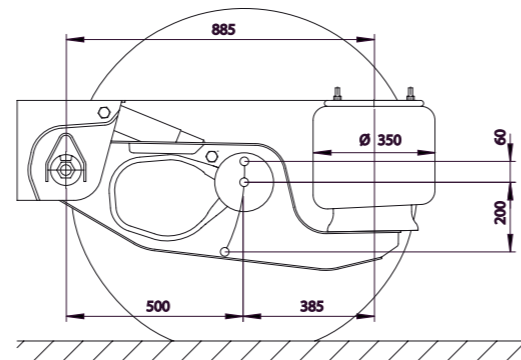
*according to the SAF-HOLLAND guarantee conditions

TECHNICAL DATA

For all requirements of vehicle manufacturers and transportation companies

- maximum axle load 9t
- driving height 230 mm
- axle travel of 260 mm for loading ramp adjustment
- suitable for the new generation of tyres with sizes such as 455/40 R22.5", 445/45 R19.5" and 435/50 R19.5" aluminium and steel wheels
- use of 19.5" and 22.5" disc and drum brakes

MEGA IS ALSO AVAILABLE WITH AIRVENT WHEEL END!



Total suspension travel:
260 mm



More offset:
The new functional suspension arm allows low ride heights



Designed asymmetrically:
The spring offset ensures freedom of choice in terms of tyres

SAF INTRA SELF-STEERING AXLE



Light and agile: The SAF INTRA self-steering axle has an additional weight of only 136 kg in comparison with the corresponding rigid axle.

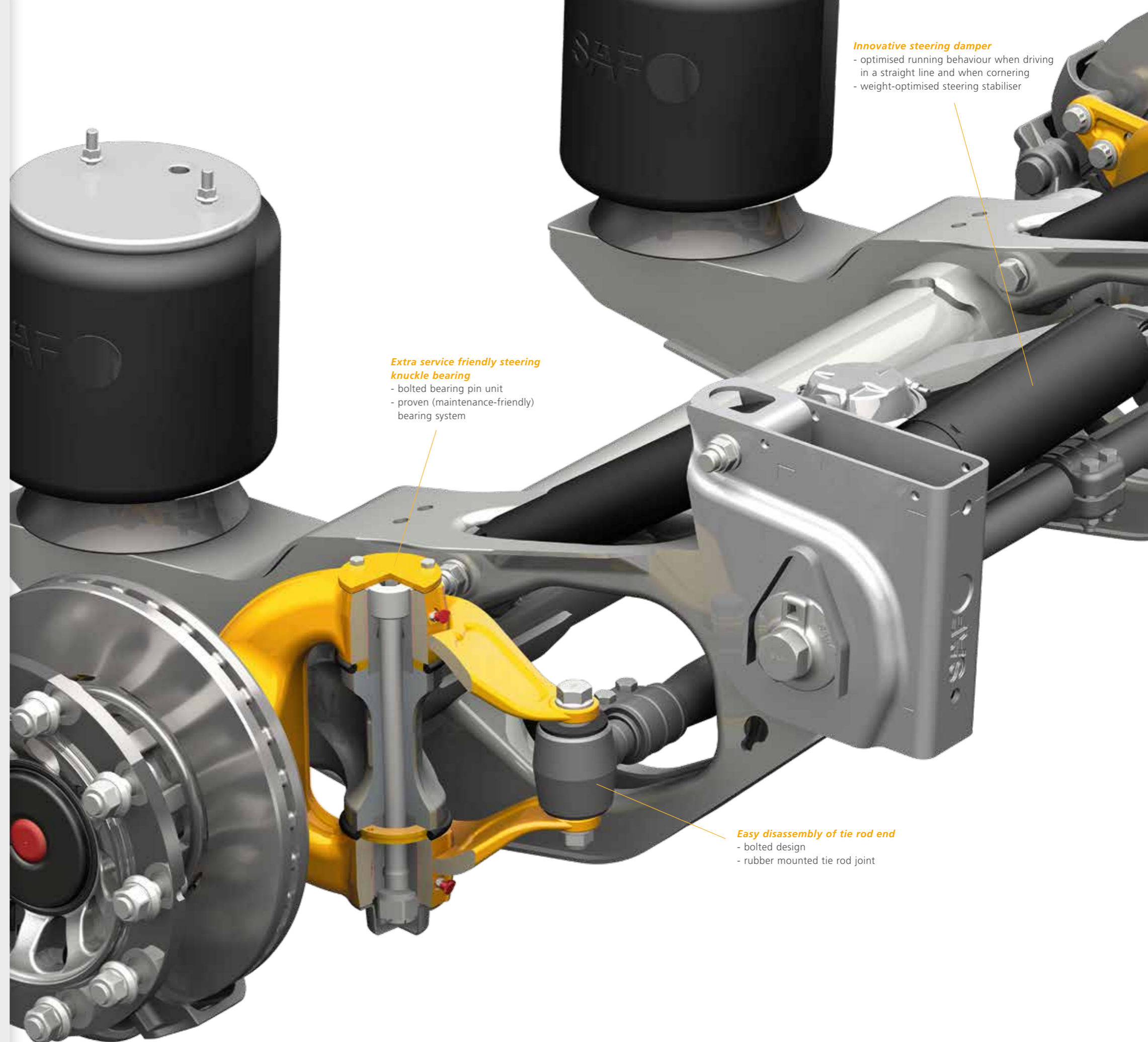
The steering axle SAF INTRADISC *plus* INTEGRAL was developed for special transportation requirements in delivery services – such as tight and winding roads.

The steering axle is a winner owing to:

- less tyre wear
- less fuel consumption
- a high level of driving comfort
- optimal maneuverability
- precise run
- higher resale value of the trailer

TECHNICAL DATA

Axle load:	9t
Track:	2040 and 2090 (other track widths on request)
Brake:	INTEGRAL disc brake optional 22.5" and 19.5" with B9 or B19 hub unit (standard or INTEGRAL)
Offset:	ET 120
Tyres:	single
Max. 20° steering angle subject to the track, spring centres and attachments	



Innovative steering damper
- optimised running behaviour when driving in a straight line and when cornering
- weight-optimised steering stabiliser

Extra service friendly steering knuckle bearing
- bolted bearing pin unit
- proven (maintenance-friendly) bearing system

Easy disassembly of tie rod end
- bolted design
- rubber mounted tie rod joint

SAF INTRA PC PREMIUM COATED

As the first manufacturer, SAF-HOLLAND offered a 9t axle protected by Zinc metal spraying with a great success. Now we have gone a step further and have improved corrosion resistance with our new PREMIUM COATED process.

Trailer axles are exposed to environmental influences such as dirt and moisture and thus susceptible to corrosion. With our new 3-layer PREMIUM COATED process, we achieve excellent corrosion protection by adding a high content of Zinc in the coating, guaranteeing long-lasting value retention of the product. This we give with a 10 year warranty for the axle road-worthiness due to corrosion. By the way, the new PREMIUM COATED top layer is very easy to overpaint.

BENEFITS AT A GLANCE

- significant increase in corrosion resistance
- 10 year guarantee against rust
- continuous increase in operating efficiency
- available in INTRA range



10-YEAR-GUARANTEEE
AGAINST RUST PERFORATION!

SAND-BLASTED AXLE

KTL COATING

DARK GREY
TOP COAT

ZINC-BASED PRIMER

OPTIONS

ABS SENSING

SAF TWO-SIDE AXLE LIFT

SAF ONE-SIDE AXLE LIFT

SAF KILOMETRE COUNTER

SAF TIRE PILOT

BRAKE CYLINDERS

SAF UP TRAIN LOADING SYSTEM

PAD WEAR SENSING

SAF PROTECTOR SHEET

SAF PC PREMIUM COATED

SAF REINFORCED AIR SPRINGS

OPTIONS FOR THE AXLES



PRODUCT	SAF ABS SENSING	SAF TWO-SIDE AXLE LIFT	SAF ONE-SIDE AXLE LIFT
DESCRIPTION >	- exciter ring and sensor holder (as standard/pre-assembled) - can be activated using simple and reliable plug connections	- for 22.5" wheels - only weighs approx. 21 kg per axle - very simple retrofit	- specifically for low ride heights - only weighs approx. 30 kg - very simple retrofit
AXLE v			

SAF INTRADISC PLUS INTEGRAL	X	X	X
SAF INTRADISC AIRVENT	X	X	X
SAF INTRADRUM	X	X	X
SAF INTRA CD DRUM	X	X	X
SAF INTRA CD DISC	X	X	X
SAF INTRA CD TRAK	X	-	-
SAF INTRA MEGA	X	X	X
SAF INTRA SELF-STEERING AXLE	X	-	X



PRODUCT	SAF HUBODOMETER	SAF TIRE PILOT	SAF BRAKE CHAMBERS	SAF UP TRAIN LOADING SYSTEM
DESCRIPTION >	- measures the exact mileage of trailers - simple retrofit - quick and reliable mounting	- tyre-inflating system for trailers and semi-trailers - monitoring and preservation of the set tire pressure in the trailer	- complete surface coating - high-quality internal components - fully integrated air connections	- one of the lightest train loading suspension on the market - springs not clamped during rail loading
AXLE v				

	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	on request
	X	X	X	on request
	X	-	X	-
	X	X	X	X
	X	X	X	X



PRODUCT	SAF PAD WEAR SENSING	SAF PROTECTOR SHEET	SAF PC PREMIUM COATED	SAF REINFORCED AIR SPRINGS
DESCRIPTION >	- simple retrofit - can be connected to the Trailer EBS or to a separate control and display unit	- protects the brake disc against stone chipping and other foreign objects	- with our new 3-layer coating protection with up to 50 % Zinc content - very high corrosion protection	- with steel plungers for extreme loads
AXLE v				

	X	X	X	X
	X	X	X	X
	-	standard	-	X
	-	standard	-	X
	X	X	X	X
	X	X	-	X
	X	X	X	X
	X	X	-	X



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