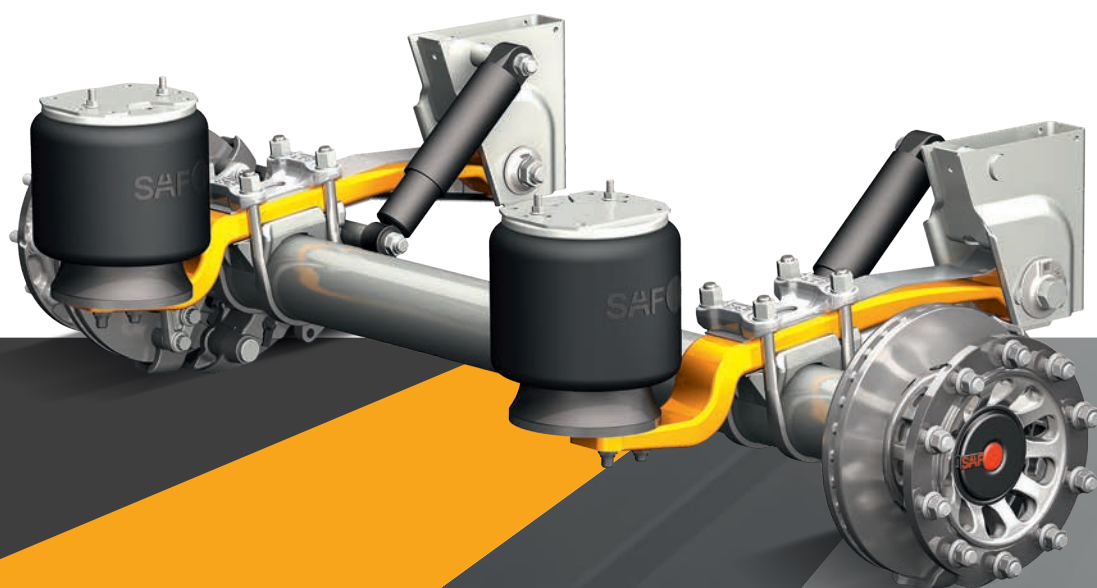
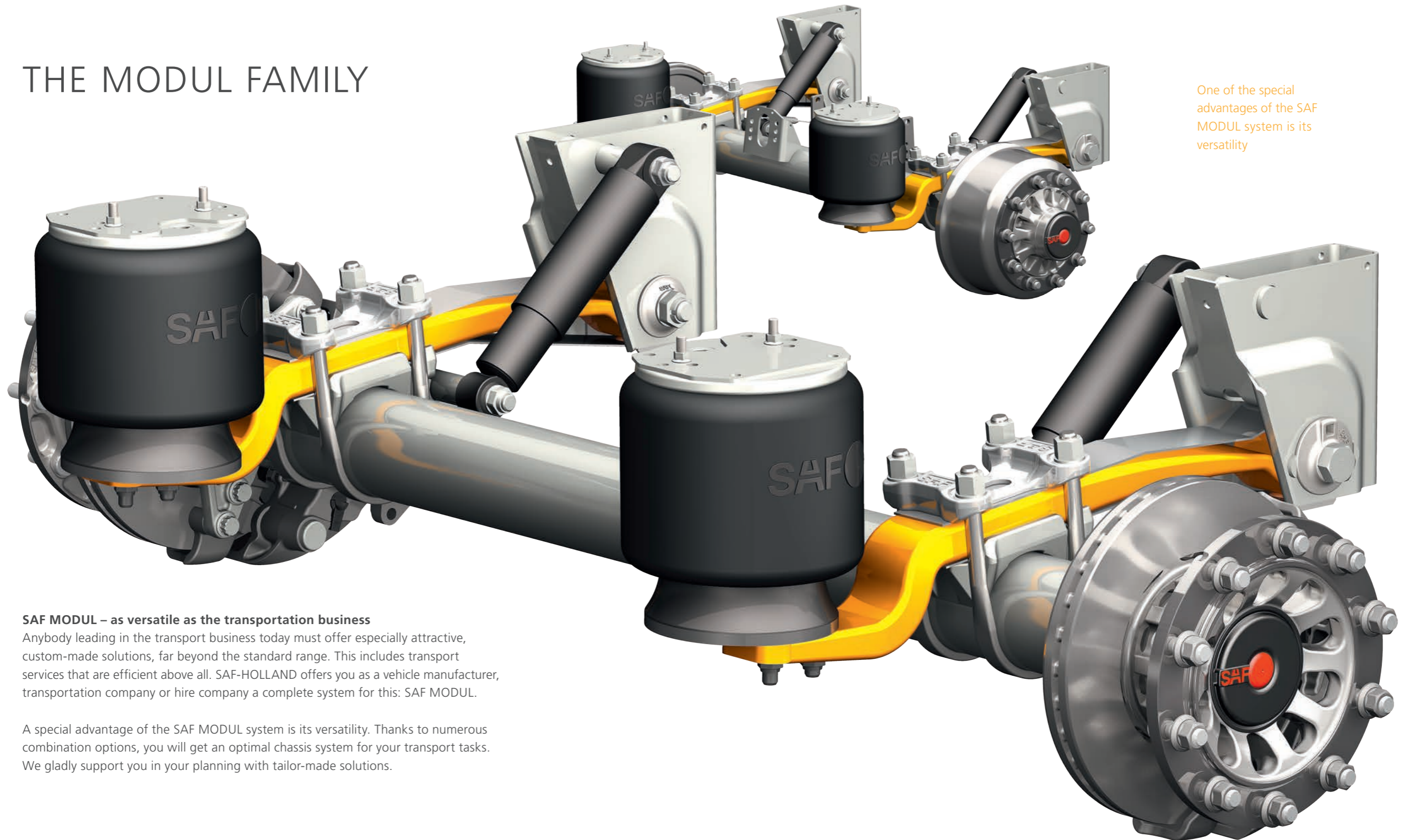


SAF MODUL

Versatile chassis system according to your needs



THE MODUL FAMILY



One of the special advantages of the SAF MODUL system is its versatility

Individual solutions for economical transport services

SAF MODUL – as versatile as the transportation business

Anybody leading in the transport business today must offer especially attractive, custom-made solutions, far beyond the standard range. This includes transport services that are efficient above all. SAF-HOLLAND offers you as a vehicle manufacturer, transportation company or hire company a complete system for this: SAF MODUL.

A special advantage of the SAF MODUL system is its versatility. Thanks to numerous combination options, you will get an optimal chassis system for your transport tasks. We gladly support you in your planning with tailor-made solutions.

MODUL SERIES

TRAILING ARM UNDER THE AXLE

CRANKED TRAILING ARM OVER THE AXLE

TRAILING ARM OVER THE AXLE

EXTENDED TRAILING ARM LENGTH

ALL MODUL SERIES AT A GLANCE

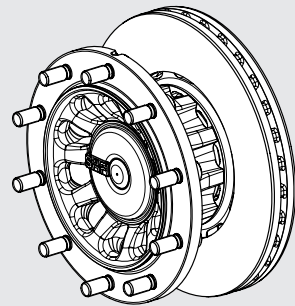
| <ul style="list-style-type: none"> Air spring type Identifier Diameter Total suspension travel | Model series | Features | Trailing arm variants | | | | Nominal ride height range | 2618V | 2918V | 2923V | 2926V | 3138 |
|--|--------------|---|-----------------------|-------------|----------|-------------|---------------------------|-------|--------------|--------------|--------------|-------------------------------|
| | | | 100 x 52 | 100 x 43/43 | 100 x 60 | 100 x 54/54 | | 29 | 27 2919V* | 31 2924V* | 30 2927V* | N/A |
| | U | Trailing arm under the axle | • | • | | | 170 to 380 | 180 | 180 | 200 | 260 | |
| | M | Cranked trailing arm over the axle | • | • | | | 340 to 530 | 180 | 180 | 200 | 260 | |
| | MT | Cranked trailing arm over the axle | • | | | | 250 to 410 | 180 | 180 | 200 | | |
| | O | Trailing arm over the axle | • | • | | | 400 to 600 | 180 | 180 | 200 | 260 | |
| | EO | Trailing arm over the axle | • | • | | | 390 to 540 | 190 | 190 | 220 | | |
| | HU | Trailing arm under the axle, extended trailing arm length | | | • | • | 220 to 315 | | | 260 | 300 | |
| | AR 421 | Trailing arm under the axle, extended trailing arm length | | | | • | 250 to 500 | | | | 310 | |
| | AR 421H | Trailing arm under the axle, extended trailing arm length | | | | • | 380 to 480 | | | | | 420 with 9 t 400 with 10 t |

All dimensions in mm

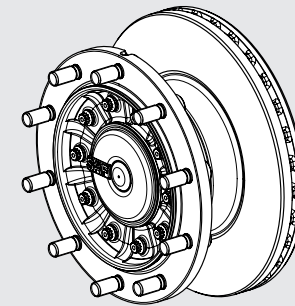
* Technical combination options of all air spring types with diameter 350 and plastic piston on request
The design manual SAF MODUL can be found at: www.safholland.com - downloads

RIGID AXLES (9 - 12 t axle load)

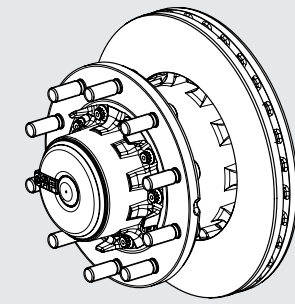
Absolutely flexible use and, at the same time, proven 100,000 times – thanks to the pre-set and therefore maintenance-free wheel bearing technology.



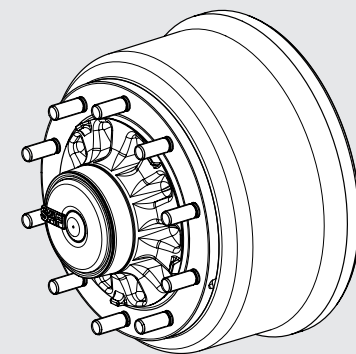
BI series (INTEGRAL wheel end unit) with disc brakes for single wheels ET120



B series (AirVent wheel end unit) with disc brakes for single wheels ET120



S and Z series with disc brakes for single wheels ETO/twin wheels



S and Z series with drum brakes for single wheels ETO/twin wheels

WITH DISC BRAKES

| Axle version | Single | Offset [mm] | Twin | Axle load up to 105 km/h [t] | Brake size [mm] | Brake | Test report* | Number of exciter ring teeth | Wheel connection | Tires [inch] |
|--------------|--------|-------------|------|------------------------------|-----------------|--------------------|--------------------|------------------------------|---|------------------|
| B(l)9-19S | • | 120 | | 9 | 377 x 45 | SAF SBS 1918 | TDB0870 | 90 | 10/280/335/M22x1.5 | 19.5 / 20 / 22.5 |
| B(l)9-19K | • | 120 | | 9 | 377 x 45 | KNORR SB6 (ST6) | TDB0605 | 90 | 10/280/335/M22x1.5 | 19.5 / 20 / 22.5 |
| SI9-19S | • | 0 | | 9 | 377 x 45 | SAF SBS 1918 | TDB0870 | 90 | 8/220/275/M22x1,5 10/280/335/M22x1,5 | 19.5 / 20 / 22.5 |
| SI9-19K | • | 0 | | 9 | 377 x 45 | KNORR SB6 (ST6) | TDB0605 | 90 | 8/220/275/M22x1,5 10/280/335/M22x1,5 | 19.5 / 20 / 22.5 |
| ZI9-19S | | | • | 9 | 377 x 45 | SAF SBS 1918 | TDB0870 TDB0878 | 90 | 8/220/275/M22x1.5 | 19.5 |
| ZI9-19K | | | • | 9 | 377 x 45 | KNORR SB6 (ST6) | TDB0606 | 90 | 8/220/275/M22x1.5 | 19.5 |
| BI10-19S | • | 120 | | 10 | 377 x 45 | SAF SBS 1918 | TDB0870 | 90 | 10/280/335/M22x1.5 | 19.5 / 20 / 22.5 |
| BI10-19K | • | 120 | | 10 | 377 x 45 | KNORR SB6 (ST6) | TDB0605 | 90 | 10/280/335/M22x1.5 | 19.5 / 20 / 22.5 |
| SI11-19K | • | 0 | | 11 | 377 x 45 | KNORR SB6 (ST6) | TDB0605 | 90 | 8/220/275/M22x1.5 | 19.5 |
| ZI11-19K | | | • | 11 | 377 x 45 | KNORR SB6 (ST6) | TDB0606 | 90 | 8/220/275/M22x1.5 | 19.5 |
| B(l)9-22S | • | 120 | | 9 | 430 x 45 | SAF SBS 2220 (H01) | TDB0843 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| B(l)9-22S01 | • | 120 | | 9 | 430 x 45 | SAF SBS 2220 (K0) | 36102214 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| SI9-22S | • | 0 | | 9 | 430 x 45 | SAF SBS 2220 (H01) | TDB0843 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| SI9-22S01 | • | 0 | | 9 | 430 x 45 | SAF SBS 2220 (K0) | 36102214 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| ZI9-22S | | | • | 9 | 430 x 45 | SAF SBS 2220 (H01) | TDB0843 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| ZI9-22S01 | | | • | 9 | 430 x 45 | SAF SBS 2220 (K0) | 36102214 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| BI10-22S | • | 120 | | 10 | 430 x 45 | SAF SBS 2220 (H01) | TDB0843 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| BI10-22S01 | • | 120 | | 10 | 430 x 45 | SAF SBS 2220 (K0) | 36102214 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| SI11-22K11 | • | 0 | | 11 | 430 x 45 | KNORR SB7 (SK7) | 36101814 | 100 | 10/280/335/M22x1.5 | 20 / 22.5 |
| ZI11-22K11 | | | • | 11 | 430 x 45 | KNORR SB7 (SK7) | 36101814 | 100 | 10/280/335/M22x1.5 | 20 / 22.5 |
| SI12-22K10 | • | 0 | | 12 | 430 x 45 | KNORR SB7 (SN7) | TDB0590 | 100 | 10/280/335/M22x1.5 | 20 / 22.5 |
| ZI12-22K10 | | | • | 12 | 430 x 45 | KNORR SB7 (SN7) | TDB0590 | 100 | 10/280/335/M22x1.5 | 20 / 22.5 |

WITH DRUM BRAKES

| Axle version | Single | Offset [mm] | Twin | Axle load up to 105 km/h [t] | Brake size [mm] | Brake | Test report* | Number of exciter ring teeth | Wheel connection | Tires [inch] |
|--------------|--------|-------------|------|------------------------------|-----------------|---------|--------------|------------------------------|---|--------------|
| Z9-3020 | | | • | 9 | 300 x 200 | SAF SNK | TDB0487 | 80 | 10/175/225/M22x1.5 | 15 / 17.5 |
| Z11-3020 | | | • | 11 | 300 x 200 | SAF SNK | TDB0487 | 80 | 10/175/225/M22x1.5 | 15 / 17.5 |
| SKRZ12030S | | | • | 12 | 300 x 200 | SAF SNK | TDB0882 | 80 | 10/175/225/M22x1.5 | 15 / 17.5 |
| S9-3718 | • | 0 | | 9 | 367 x 180 | SAF SNK | TDB0459 | 90 | 8/220/275/M22x1.5 10/280/335/M22x1.5 | 19.5 |
| Z9-3720 | | | • | 9 | 367 x 200 | SAF SNK | TDB0460 | 90 | 8/220/275/M22x1.5 10/175/225/M22x1.5 | 19.5 |
| Z11-3720 | | | • | 11 | 367 x 200 | SAF SNK | TDB0460 | 90 | 8/220/275/M22x1.5 10/175/225/M22x1.5 | 19.5 |
| SKRZ12037 | | | • | 12 | 367 x 200 | SAF SNK | TDB0460 | 90 | 8/220/275/M22x1.5 10/175/225/M22x1.5 | 19.5 |
| S9-4218 | • | 0 | | 9 | 420 x 180 | SAF SNK | TDB0381 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| Z9-4218 | | | • | 9 | 420 x 180 | SAF SNK | TDB0483 | 90 | 10/280/335/M22x1.5 | 20 / 22.5 |
| S11-4220S10 | • | 0 | | 11 | 420 x 200 | SAF SNK | TDB0455 | 100 | 10/280/335/M22x1.5 | 20 / 22.5 |
| Z11-4220S10 | | | • | 11 | 420 x 200 | SAF SNK | TDB0455 | 100 | 10/280/335/M22x1.5 | 20 / 22.5 |
| S12-4220S10 | • | 0 | | 12 | 420 x 200 | SAF SNK | TDB0455 | 100 | 10/280/335/M22x1.5 | 20 / 22.5 |
| Z12-4220S10 | | | • | 12 | 420 x 200 | SAF SNK | TDB0455 | 100 | 10/280/335/M22x1.5 | 20 / 22.5 |

* The test reports can be found at: www.safholland.com - downloads

WHEEL END UNIT DRUM BRAKE

WHEEL END UNIT DISC BRAKE

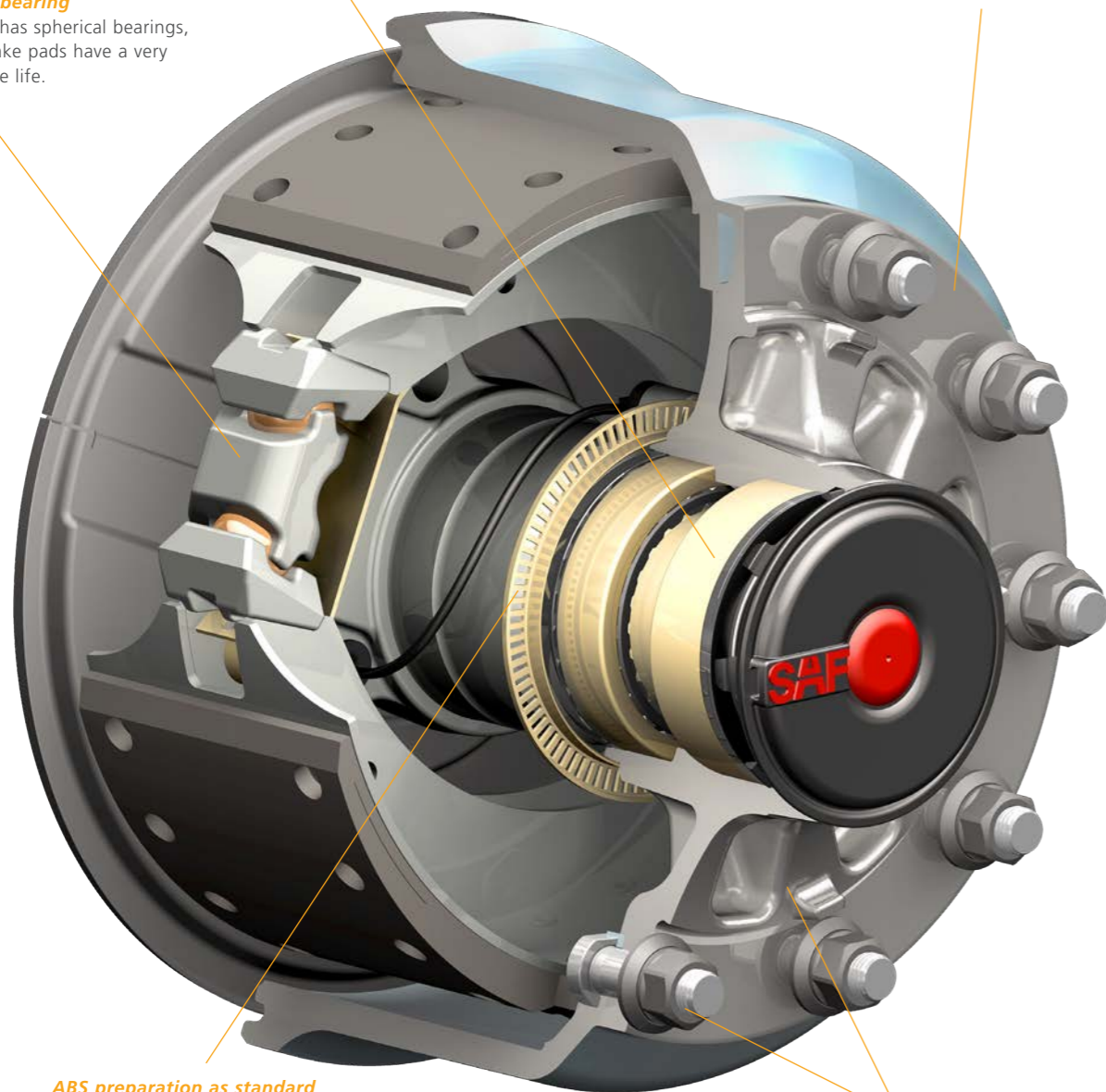
SAF hub unit

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

Spherical bearing

The brake has spherical bearings, i.e. the brake pads have a very long service life.

Continuous rim system



ABS preparation as standard

Corrosion protection

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

INTEGRAL advantage 1

Compared to a design with one-piece brake disc and closed wheel flange, now 100 % more heat-emitting surface.

INTEGRAL advantage 2

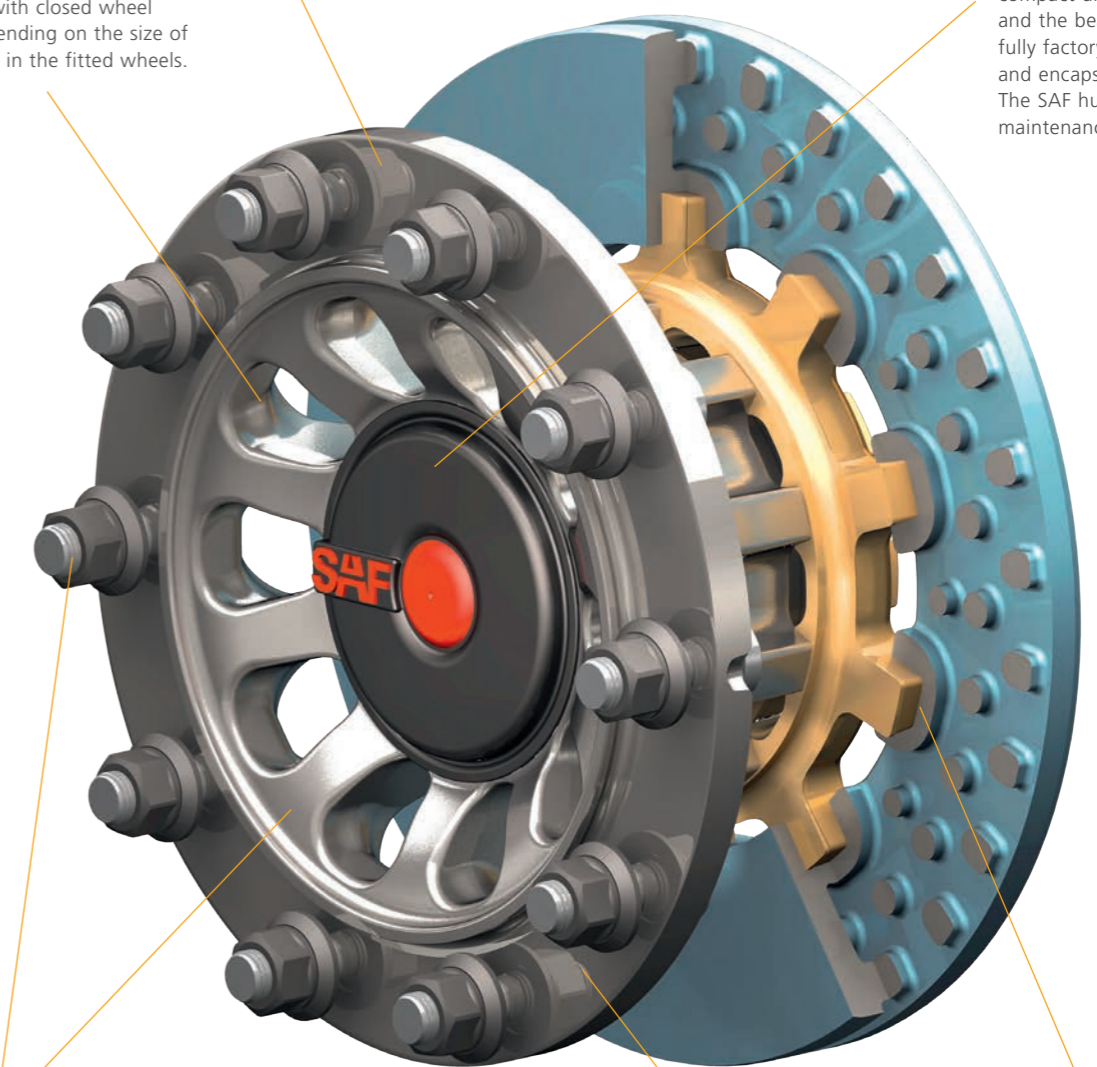
With 10 large radiator-like ventilation cross-sections in the wheel flange, the INTEGRAL achieves at least 60 % more ventilation cross-section compared to a design with closed wheel flange – depending on the size of the openings in the fitted wheels.

SAF INTEGRAL [ET 120]

The figure shows the INTEGRAL wheel end with offset 120. For 9 t single tire disc brake axles with offset 120, the AirVent wheel end reveals an alternative price-performance ratio (axle technology and exemplary price-performance ratio (axle versions B9-19 and B9-22)).

SAF hub unit

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



Corrosion protection

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

Continuous rim system

INTEGRAL advantage 3

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

DRUM BRAKE

WELL THOUGHT-OUT AND SOPHISTICATED MECHANICS

What counts is the quality: Regardless of whether you want to equip the SAF MODUL suspension system with a drum brake or disc brake – what you always get is the safety of prime quality.

This is why SAF-HOLLAND has been working closely and exclusively with recognised and internationally successful supply partners. This ensures that with SAF-HOLLAND you not only drive a particularly economic air suspension system but a comfortably safe one, to boot.



Inner S-camshaft compact bearing

Outer S-camshaft compact bearing

S-camshaft compact bearing

As a pre-assembled unit with no individual parts – and thanks to its compact dimensions – the S-camshaft compact bearing can be replaced easily and quickly at any time. The bearing comes with permanent corrosion protection, merely requiring lubrication at regular intervals. You save on time, money – and weight.

SAF brake pads

SAF brake pads are asymmetrically shaped by computer modelling and are subject to strict production control on an ongoing basis. Special material mixes and the unique form are convincing arguments in actual practice due to their long service life and best possible safety. SAF-HOLLAND quality pays off: If the pads must be replaced, the use of SAF-HOLLAND original parts is highly recommended.



Fewer parts

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



Spherical bearing

The brake shoes on the SAF axle are mounted around a spherical head. Thanks to their unique geometry, the shoes can move in all directions, distributing the force more evenly across the pads, which therefore can be used much longer.



Replacing brake shoes in seconds

For the SAF axle, all you need is a screwdriver and a steady hand – thus replacing the brake shoes is ingeniously simple and done in a matter of seconds.



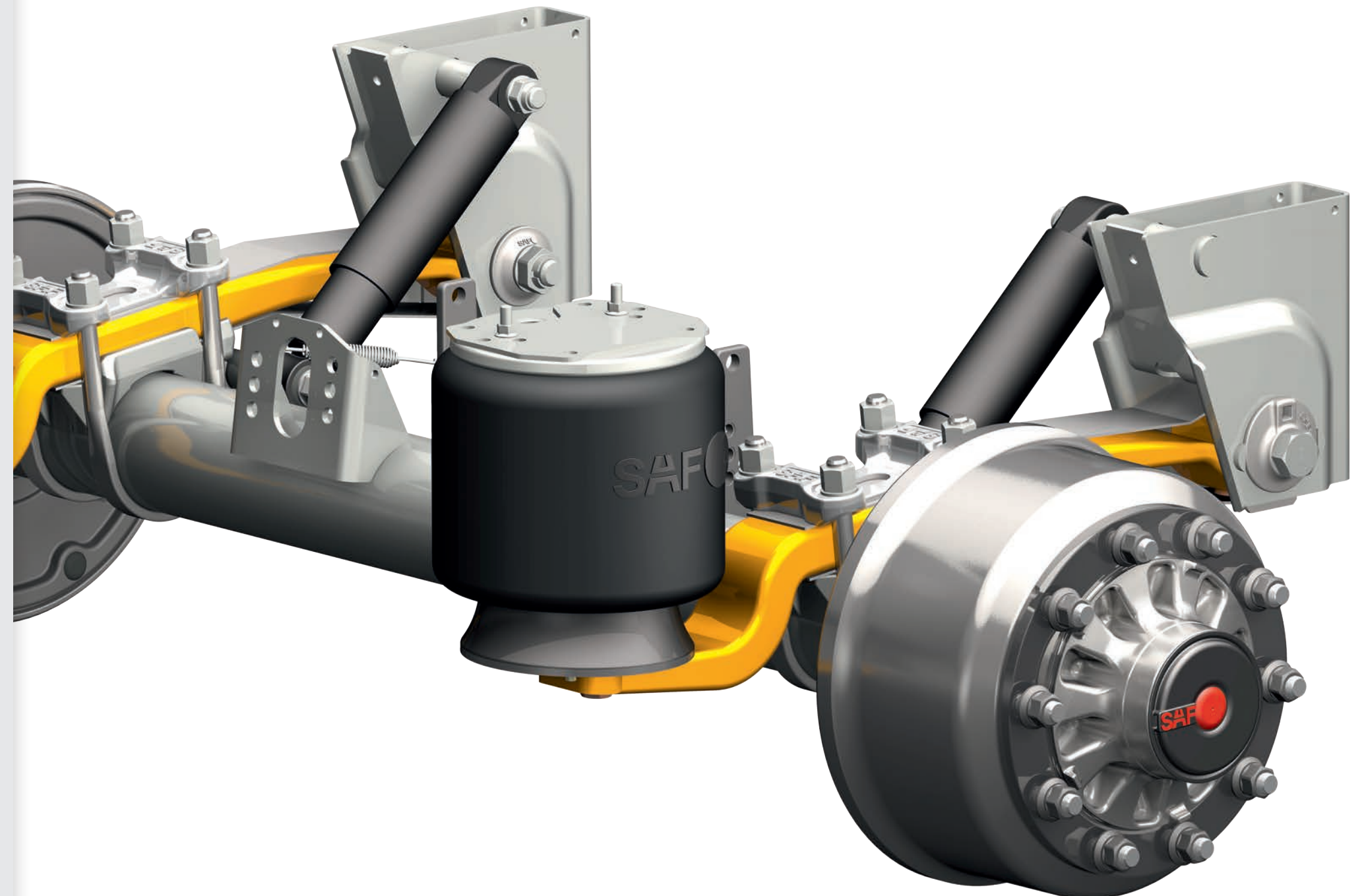
Precise cam roller guide

The precision-machined S-cams precisely control the movement of the brake shoes and the contact pressure to guarantee optimum braking.



Finish-ground contoured brake lining

Machining is not necessary even after repair. After the very first drum rotation, you can rely again on the full braking power of your SAF axle.



DISC BRAKE TARGETED AND INNOVATIVE INTEGRAL TECHNOLOGY

Unique in the world for use in disc-brake trailers –
SAF INTEGRAL DISC.

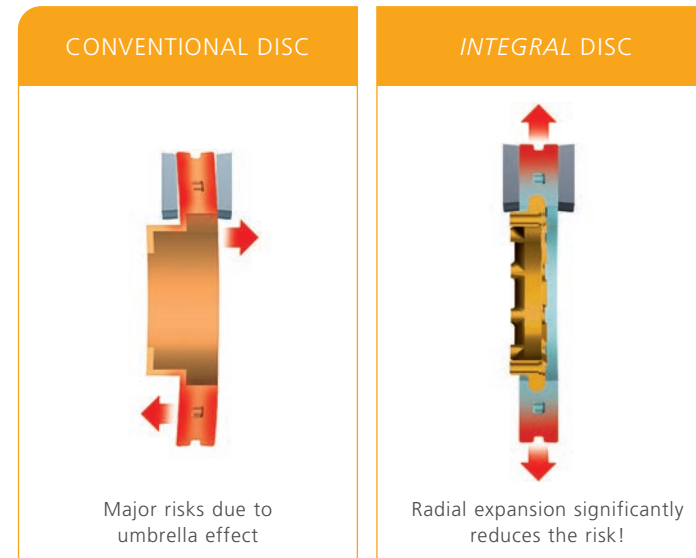
Disc brakes technology has stood the test in the commercial vehicle segment. As a pioneer in this field, SAF-HOLLAND has systematically and consistently developed its advantages for actual practical use: The patented INTEGRAL TECHNOLOGY from SAF-HOLLAND is unique in the industry, safe and at the same time economic.

SAF-HOLLAND PATENT



THE SOLUTION: INTEGRAL TECHNOLOGY

The INTEGRAL disc is cast onto a splined high-tensile adapter ring and bolted to the wheel hub as a unit. 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.



Optimum temperature distribution

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



RECOMMENDATIONS FOR SAF MODUL

ZONE A: Europe

| APPLICATION [axle load in t up to 105 km/h] | container, tanker, silo | walking floor | curtain, box, cooler, platform, lafette | tipper, wood | low-loader |
|---|----------------------------|---------------|---|--------------|------------|
| INTRA [9] | S | - | S | - | - |
| INTRA CD [9] | O | S | O | S | - |
| MODUL [9] | O | O | O | O | S |
| MODUL [10-14] | S | S | S | S | S |

ZONE B: Turkey

| APPLICATION [axle load in t up to 105 km/h] | container, tanker, silo | walking floor | curtain, box, cooler, platform, lafette | tipper, wood | low-loader |
|---|----------------------------|---------------|---|--------------|------------|
| INTRA [9] | - | - | S | - | - |
| INTRA CD [9] | S | S | O | - | - |
| MODUL [9] | O | O | O | S | S |
| MODUL [10-14] | S | S | S | S | S |

ZONE C: European part of Russia incl. Ural, excl. Asian part of Russia

| APPLICATION [axle load in t up to 105 km/h] | container, tanker, silo | walking floor | curtain, box, cooler, platform, lafette | tipper, wood | low-loader |
|---|----------------------------|---------------|---|--------------|------------|
| INTRA CD [9] | S | S | S | - | - |
| MODUL [9] | O | O | O | S | S |
| MODUL [10-14] | S | S | S | S | S |

ZONE D: South Africa

| APPLICATION [axle load in t up to 105 km/h] | container, tanker, silo | walking floor | curtain, box, cooler, platform, lafette | tipper, wood | low-loader |
|---|----------------------------|---------------|---|--------------|------------|
| INTRA CD [9] | S | S | S | O* | - |
| MODUL [9] | O | O | O | S | S |
| MODUL [10-14] | S | S | S | S | S |

ZONE E: Middle East and Africa

| APPLICATION [axle load in t up to 105 km/h] | container, tanker, silo | walking floor | curtain, box, cooler, platform, lafette | tipper, wood | low-loader |
|---|----------------------------|---------------|---|--------------|------------|
| INTRA CD [9] | S | S | S | - | - |
| MODUL [9] | O | O | O | S | S |
| MODUL [10-14] | S | S | S | S | S |

S = standard / O = optional / O* = not for side tippers
 Detailed information about SAF INTRA can be found in the corresponding brochure.
 For the selection of the optimal chassis system, please consult your SAF-HOLLAND contact or your vehicle manufacturer.

OPTIONS FOR THE AIR SUSPENSIONS



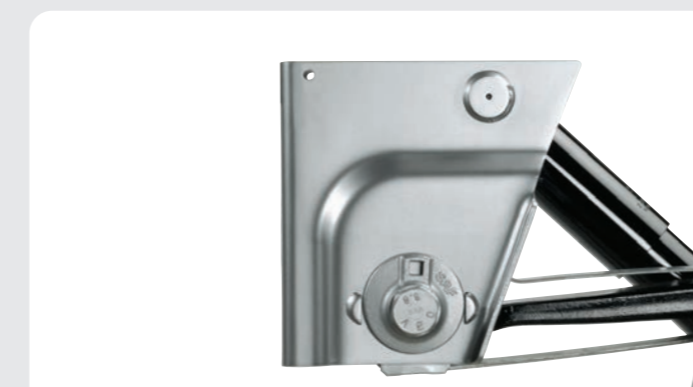
SAF TWO-SIDE AND ONE-SIDE LIFT

- individual solution for every application
- easy to retrofit
- other lift variants on request



SAF CROSS MEMBER

- enables a continuous chassis longitudinal member even when combining rigid axles and steering axles



SAF ADJUSTABLE HANGER BRACKET

- significant simplification of the wheel alignment
- drain hole for frame dip coating
- also available in stainless steel
- screw-on variants available



SAF ALUMINUM HANGER BRACKET

- for vehicles with aluminum frame

OPTIONS FOR THE AXLES



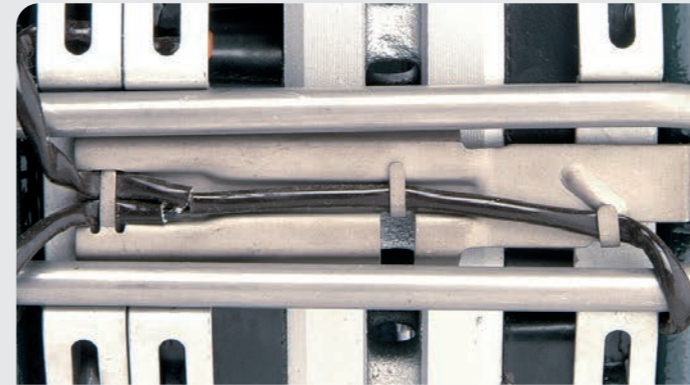
SAF ABS SENSING

- exciter ring and sensor holder (standard / pre-installed)
- can be easily activated by secure plug-in connection



SAF-O-METER

- mechanical odometer for the exact mileage
- easy to retrofit



SAF PAD CONTROL

- connection cable kit for electrical wear indicator
- can be connected to the Trailer EBS or to a separate control and display unit
- easy to retrofit

Furthermore available:

- axles with 7 t axle load
- axles with 13 - 14 t axle load
- self-steering axles
- axles for various forced steering systems



SAF SLACK ADJUSTER

- fully automatic
- robust, stable and low-maintenance
- easy, safe and fast installation
- various installation positions due to flexible control arm



SAF BRAKE CHAMBERS

- complete surface coating
- high-quality internal components
- fully integrated air connections
- for axles with disc brakes or also drum brakes



SAF TIRE PILOT

- tire-inflation system for trailers and semi-trailers
- monitoring and preservation of the set tire pressure in the trailer

IF YOU HAVE ANY
QUESTIONS ABOUT
TECHNICAL COMBINATION
OPTIONS, PLEASE CONSULT
YOUR SAF-HOLLAND
CONTACT OR YOUR
VEHICLE MANUFACTURER.

Engineering Your Road to Success

The SAF-HOLLAND Group is one of the leading international manufacturers of suspension-related assemblies and components for trailers, trucks and buses. Our innovative products increase the efficiency, safety and environmental friendliness of commercial vehicles, contribute to the success of our customers. With around 3,000 employees worldwide, we are at the forefront of shaping the future of the transportation industry.



Trailer Axles and
Suspension Systems



Coupling and Lifting
Technologies



Coupling and Lifting
Technologies



Trailer
Telematics



Suspensions for
Trucks and Buses



Suspensions and Components
for Commercial Vehicles



Trailer Axles and
Suspensions Systems

safholland.com

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