

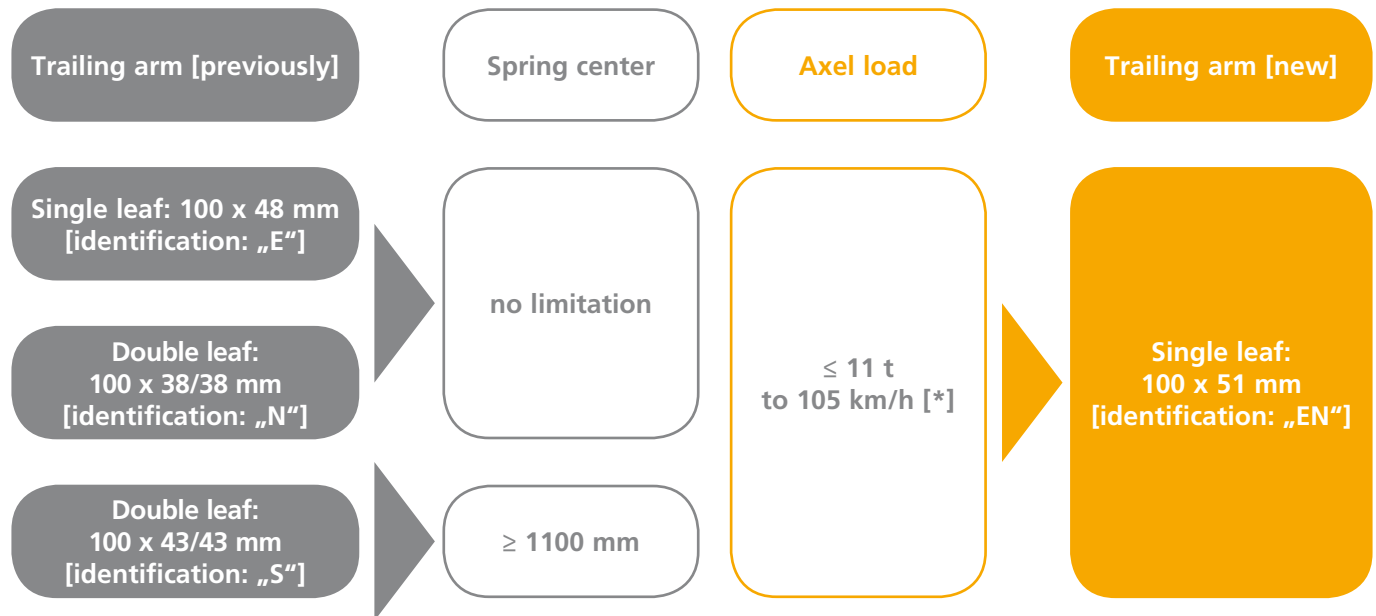
# SAF MODUL

**7-14 t AIR SUSPENSION  
WITH DISC BRAKE AND DRUM BRAKE  
17.5", 19.5" AND 22.5"**



# THE NEW SINGLE LEAF TRAILING ARM 100 x 51 mm

## All changes at a glance



\* excepted: Axel load 10-11 t up to 105 km/h in the following use: „Tipper – Heavy Use“ and „Logging“ (please refer to chart „Deployment recommendations and classification of component criteria“ second last page)

## Weight reduction/ pay load increase

Minimum weight trailing arm 100 x 51 mm

- **14 kg per axel in contrast to trailing arm 100 x 43/43 mm**
- **10 kg per axel in contrast to trailing arm 100 x 38/38 mm**

## Reduction of variations

The complete removal of the trailing arms 100 x 48 mm, 100 x 38/38 mm and the partial removal of the 100 x 43/43 mm have a profound effect on vehicle manufacturers, carriers, spare parts dealers and garages:

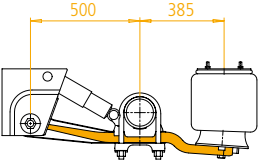
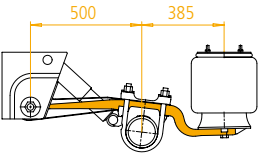
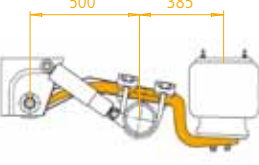
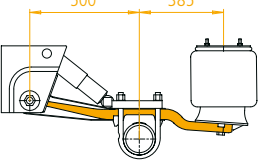
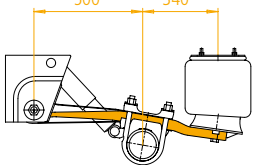
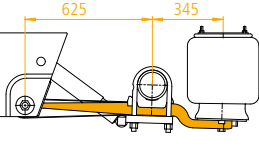
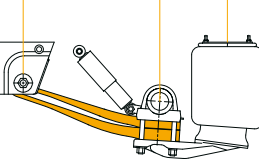
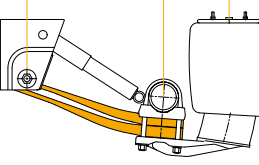
- **Simplified use in construction**
- **Simplified use when ordering**
- **Cost reduction for warehousing of spare parts**

## Retaining previous components

In combination with the new trailing arm 100 x 51 mm remain unchanged:

- **Ride height** • **Hanger brackets** • **Air bag**
- **Air bag brackets** • **Shock absorber**

# ALL THE MODUL SERIES AT A GLANCE

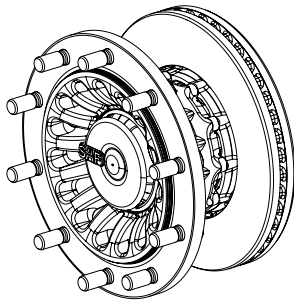
<ul style="list-style-type: none"> <li>• Air bag type</li> <li>• Identification</li> <li>• Diameter</li> <li>• Total suspension travel</li> </ul>	Series	Feature(s)	Trailing Arm-Variations				Nominal ride height	2618V 29	2918V 27 2919V*	2923V 31 2924V*	2926V 30 2927V*	3138 n.a.
			100 x 51	100 x 43/43	100 x 60	100 x 54/54		300	42 350	41 350	47 350	390
	U	Trailing arm under the axle	•	•			170 to 380	180	180	200	260	
	M	Cranked trailing arm on the axle	•	•			340 to 530	180	180	200	260	
	MT	Cranked trailing arm on the axle	•				250 to 410	180	180	200		
	O	Trailing arm on the axle	•	•			400 to 600	180	180	200	260	
	EO	Trailing arm on the axle	•	•			390 to 540	190	190	220		
	HU	Trailing arm under the axle, extended suspension arm			•	•	220 to 315			260	300	
	AR 421	Trailing arm under the axle, extended suspension arm				•	250 to 500				310	
	AR 421H	Trailing arm under the axle, extended suspension arm				•	380 to 480					420 with 9 t 400 with 10 t

All measurements in mm

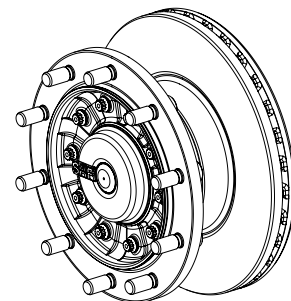
\*The technical possibility of combinations of all air bags with diameter 350 mm with plastic pistons is available on request  
 The design handbook SAF MODUL can be found under: <http://designmanual.safholland.de>

# RIGID AXLES FROM 9-11 t AXLE LOAD

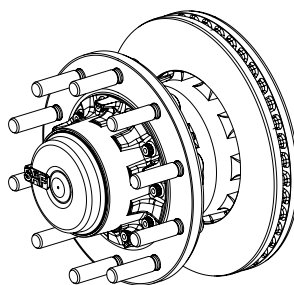
Added to the greatest possible flexibility are the benefits of the preadjusted and therefore **maintenance-free wheel bearing technology** proven 100,000 times over.



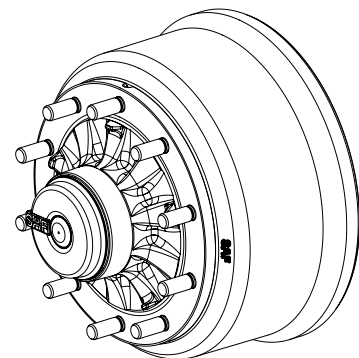
**BI-Series (INTEGRAL-Head Unit)**  
with disc brakes for  
single wheels with offset 120



**B-Series (AirVent-Head Unit)**  
with disc brakes for  
single wheels with offset 120



**S- and Z-Series**  
with disc brakes for single  
wheels with offset 0/twin wheels



**S- and Z-Series**  
with drum brakes for single wheels  
with offset 0/twin wheels

# RIGID AXLES FROM 9-11 t AXLE LOAD

With disc brakes						
Axle type	Single	Offset [mm]	Twin	Axle rating to 105 km/h [t]	Brake size [mm]	Brake type
B(l)9-19K	•	120		9	377 x 45	KNORR SB6 (SN6)
B(l)9-19W	•	120		9	377 x 45	WABCO PAN19-1
SI9-19K	•	0		9	377 x 45	KNORR SB6 (SN6)
SI9-19W	•	0		9	377 x 45	WABCO PAN19-1
ZI9-19K			•	9	377 x 45	KNORR SB6 (SN6)
ZI9-19W			•	9	377 x 45	WABCO PAN19-1
SI11-19K	•	0		11	377 x 45	KNORR SB6 (SN6)
ZI11-19K			•	11	377 x 45	KNORR SB6 (SN6)
B(l)9-22S	•	120		9	430 x 45	SAF SBS 2220 H0
B(l)9-22K01	•	120		9	430 x 45	KNORR SB7 (SK7)
SI9-22S	•	0		9	430 x 45	SAF SBS 2220 H0
SI9-22K01	•	0		9	430 x 45	KNORR SB7 (SK7)
ZI9-22S			•	9	430 x 45	SAF SBS 2220 H0
ZI9-22K01			•	9	430 x 45	KNORR SB7 (SK7)
SI11-22K01	•	0		11	430 x 45	KNORR SB7 (SK7)
ZI11-22K01			•	11	430 x 45	KNORR SB7 (SK7)

With disc brakes				
Axle type	Test report*	Exciter wheel teeth	Wheel mounting	Tyres
B(l)9-19K	TDB0605	90	10/280/335/M22x1.5	19.5"/20"/22.5"
B(l)9-19W	TDB0678	90	10/280/335/M22x1.5	19.5"/20"/22.5"
SI9-19K	TDB0605	90	8/220/275/M22x1.5	19.5"
SI9-19W	TDB0678	90	8/220/275/M22x1.5	19.5"
ZI9-19K	TDB0606	90	8/220/275/M22x1.5	19.5"
ZI9-19W	TDB0749	90	8/220/275/M22x1.5	19.5"
SI11-19K	TDB0605	90	8/220/275/M22x1.5	19.5"
ZI11-19K	TDB0606	90	8/220/275/M22x1.5	19.5"
B(l)9-22S	TDB0843	90	10/280/335/M22x1.5	20"/22.5"
B(l)9-22K01	36110303	90	10/280/335/M22x1.5	20"/22.5"
SI9-22S	TDB0843	90	10/280/335/M22x1.5	20"/22.5"
SI9-22K01	36110303	90	10/280/335/M22x1.5	20"/22.5"
ZI9-22S	TDB0843	90	10/280/335/M22x1.5	20"/22.5"
ZI9-22K01	36110103	90	10/280/335/M22x1.5	20"/22.5"
SI11-22K01	36110203	90	10/280/335/M22x1.5	20"/22.5"
ZI11-22K01	36110103	90	10/280/335/M22x1.5	20"/22.5"

\* The brake inspection report can be found under <http://testreport.safholland.de>

# RIGID AXLES FROM 9-11 t AXLE LOAD

With drum brakes						
Axle type	Single	Offset [mm]	Twin	Axle rating to 105 km/h [t]	Brake size [mm]	Brake type
Z9-3020			•	9	300 x 200	SAF SNK
Z11-3020			•	11	300 x 200	SAF SNK
S9-3718	•	0		9	367 x 180	SAF SNK
S9-3718	•	0		9	367 x 180	SAF SNK
Z9-3720			•	9	367 x 200	SAF SNK
Z9-3720			•	9	367 x 200	SAF SNK
Z11-3720			•	11	367 x 200	SAF SNK
Z11-3720			•	11	367 x 200	SAF SNK
S9-4218	•	0		9	420 x 180	SAF SNK
Z9-4218			•	9	420 x 180	SAF SNK
S11-4220	•	0		11	420 x 200	SAF SNK
Z11-4220			•	11	420 x 200	SAF SNK

With drum brakes				
Axle type	Test report*	Exciter wheel teeth	Wheel mounting	Tyres
Z9-3020	TDB0487	80	10/175/225/M22x1.5	15"/17.5"
Z11-3020	TDB0487	80	10/175/225/M22x1.5	15"/17.5"
S9-3718	TDB0459	90	8/220/275/M22x1.5	19.5"
S9-3718	TDB0459	90	10/280/335/M22x1.5	19.5"
Z9-3720	TDB0460	90	8/220/275/M22x1.5	19.5"
Z9-3720	TDB0460	80	10/175/225/M22x1.5	19.5"
Z11-3720	TDB0460	90	8/220/275/M22x1.5	19.5"
Z11-3720	TDB0460	80	10/175/225/M22x1.5	19.5"
S9-4218	TDB0381	90	10/280/335/M22x1.5	20"/22.5"
Z9-4218	TDB0483	90	10/280/335/M22x1.5	20"/22.5"
S11-4220	TDB0455	90	10/280/335/M22x1.5	20"/22.5"
Z11-4220	TDB0456	90	10/280/335/M22x1.5	20"/22.5"

\* The brake inspection report can be found under <http://testreport.safholland.de>

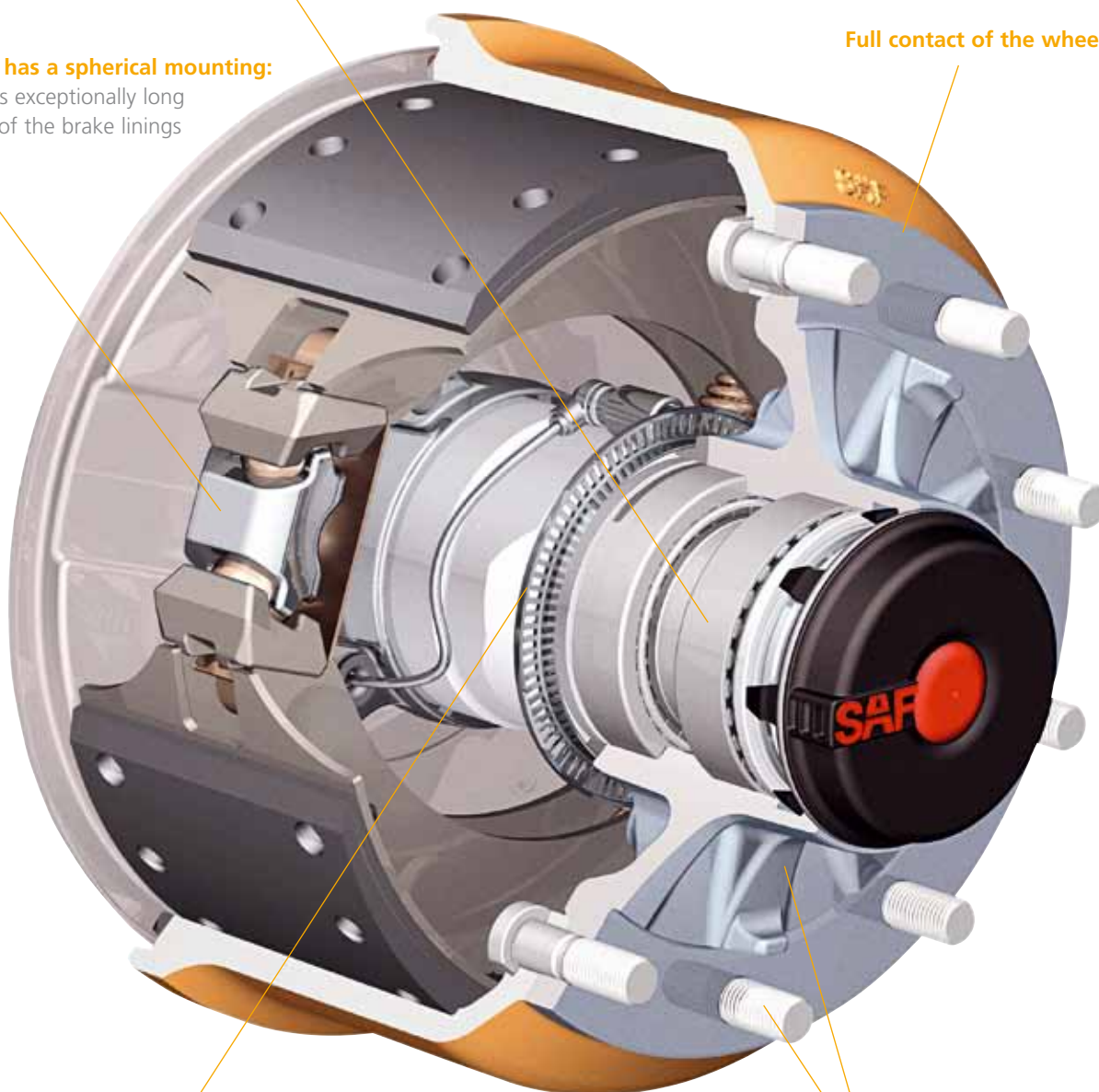
# HEAD UNIT DRUM BRAKE

**The SAF Hub-Unit** is a compact assembly of hub and bearing. It is adjusted at the factory and then encapsulated. The SAF Hub Unit is maintenance-free

**The brake has a spherical mounting:**

This ensures exceptionally long service life of the brake linings

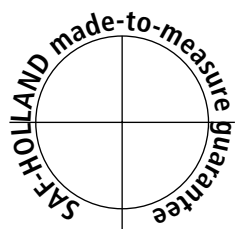
**Full contact of the wheel rim**



**ABS preparation as standard**

**Selective long-term corrosion protection**

of hub, hub caps, wheel bolts and nuts and fixings



SAF-HOLLAND offers you special guarantees, depending on the suspension system chosen. Ask your SAF-HOLLAND sales contact or your trailer builder.



# EXEMPLARY SERVICE FRIENDLINESS

## SAF DRUM BRAKES

### The major benefits of a well designed and **sophisticated mechanical system**

Whether you wish to equip the SAF MODUL suspension system with drum brakes or disc brakes – you have the security of the first choice, because we attach the greatest importance to the quality of the brakes in our suspension system. SAF-HOLLAND therefore works together closely and exclusively with recognised and internationally successful supply partners. SAF-HOLLAND thus ensures that you drive not only a particularly cost-efficient air suspension system, but also a comfortably safe one, too.



#### **CAMSHAFT COMPACT BEARING**

As a preassembled unit without individual parts. Thanks to its compact dimensions, the bearing can be replaced quickly and easily at any time, as required. It has permanent corrosion protection and only has to be lubricated at regular intervals. You save time, money and weight.



Front  
camshaft compact bearing



Rear  
camshaft compact bearing





#### PRECISE CAM ROLLER GUIDE

The precision machined S-cams can exactly control the movement of the brake shoes and the applied brake pressure. This ensures optimum braking effect.



#### COPYING NATURE: THE BALL JOINT ADVANTAGE SAF: THE SPHERICAL BEARING

On the SAF axle, the brake shoes are mounted around a spherical head like a ball joint. Thanks to their special geometry, the shoes remain mobile in all directions, allowing the linings to wear more uniformly and also for greater life.



#### FINISH-GROUND BRAKE LINING CONTOUR

Even in the event of a repair, machining the brake linings is not necessary. You can therefore rely on the full braking force of your SAF axle again right from the first turn of the brake drum.



#### BRAKE SHOE CHANGE WITHIN SECONDS

With the SAF axle, all you need is a screwdriver and a flick of the wrist – extremely simple and done in seconds.



#### LESS INDIVIDUAL PARTS

You save not only on stocks of spare parts but also and more particularly on maintenance and repair.

#### SAF BRAKE LININGS

are asymmetrically shaped using computer calculations and are subject to continuous strict production controls. Special material blends and the unusual shape pay off by giving long service life and the best possible safety. When the brake linings have to be changed, replacement with SAF-HOLLAND ORIGINAL PARTS is always to be recommended.

# HEAD UNIT DISC BRAKE *INTEGRAL* [OFFSET 120]

## **INTEGRAL-benefit**

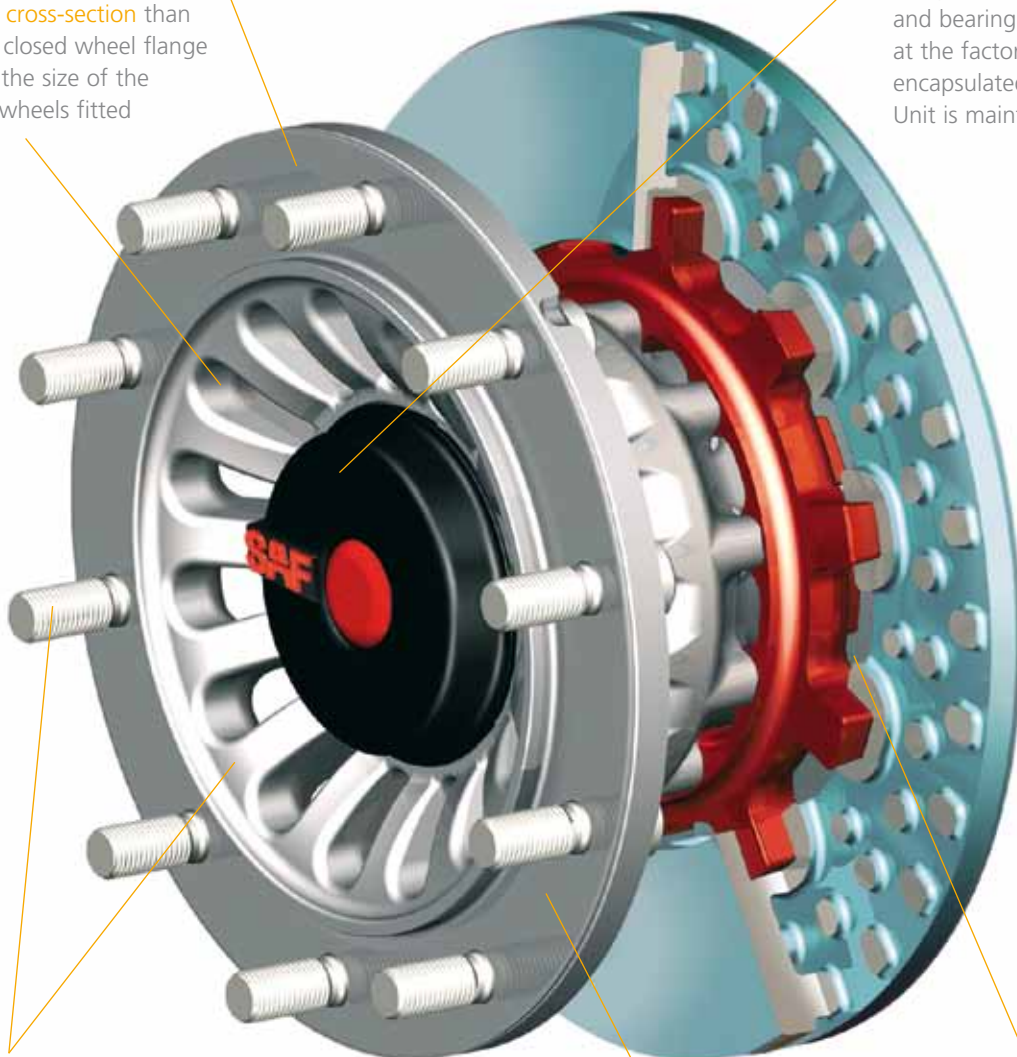
100 % more heat dissipating surface area compared with a design with one-piece brake disc and closed wheel flange

An alternative option for brake discs with 9 ton axle capacity with single tyres offset 120 is the new SAF AirVent Head Unit with optimised disc brake technology and exemplary value for money (axle versions B9-19 and B9-22 – see also our brochure „SAF INTRADISC with AirVent Head Unit“).

## **INTEGRAL-benefit**

With 15 large radiator-like ventilation slots in the wheel flange, SAF achieves at least 60 % more ventilation cross-section than in a design with closed wheel flange – depending on the size of the openings in the wheels fitted

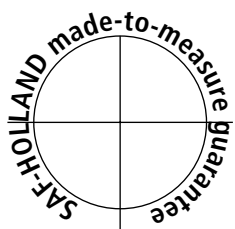
**The SAF Hub-Unit** is a compact assembly of hub and bearing. It is adjusted at the factory and then encapsulated. The SAF Hub Unit is maintenance-free



**Selective long-term corrosion protection** of hub, hub caps, wheel bolts and nuts and fixings

**Full contact of the wheel rim**

**INTEGRAL benefit**  
Significantly reduced heat transmission thanks to small contact surfaces between INTEGRAL disc and wheel flange



SAF-HOLLAND offers you special guarantees, depending on the suspension system chosen. Ask your SAF-HOLLAND sales contact or your trailer builder.

# A MODEL OF SAFETY AND COST EFFICIENCY

## SAF DISC BRAKES with all the benefits of the trendsetting *INTEGRAL TECHNOLOGY*

SAF-HOLLAND  
PATENT

The disc brake technology in the trailer has established itself and its share of the market will continue to grow in the future.

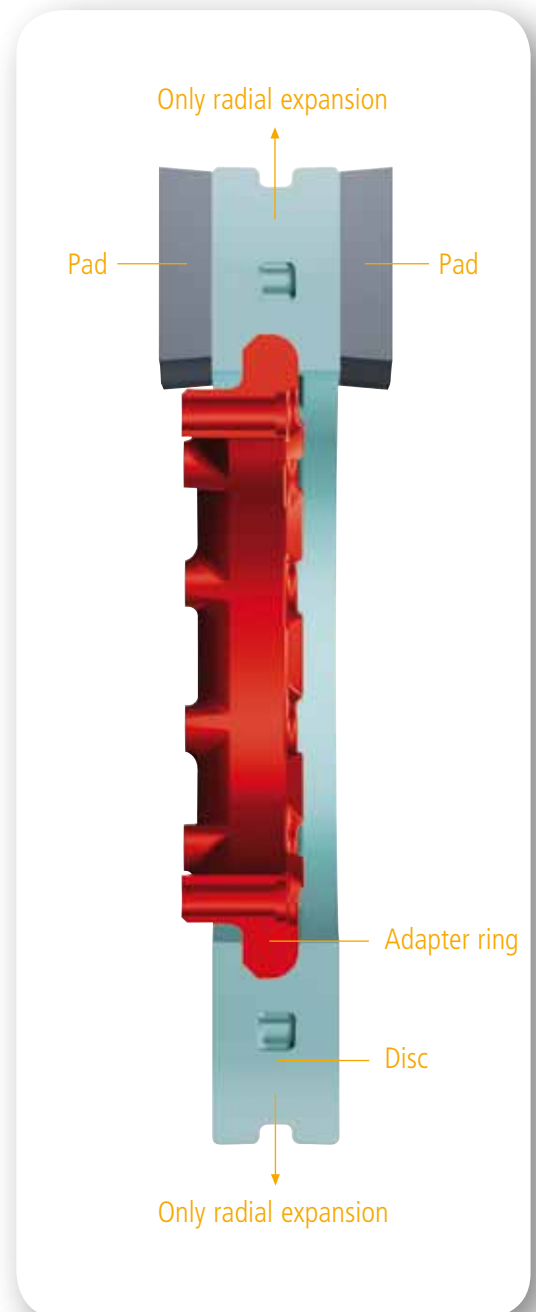
SAF-HOLLAND is one of the pioneers of this technology and has developed its benefits systematically and consequently for practical application and patented it for you: The *INTEGRAL DISC* – for use in disc-braked trailers for the first time worldwide.



The *INTEGRAL DISC* is cast onto a high-strength splined adapter ring and bolted to the wheel flange as a self-contained unit. An absolutely clearance-free connection is created between adapter ring and brake disc without the two parts fusing together. And there lies the crucial benefit:

The compound casting of disc and adapter means that the **disc can expand radially** and **retracts again radially** as it cools.

And that means: The dreaded “hot spots” that result in stresses in the material and potential cracking right up to failure of the disc with conventional brake discs are eliminated. And since the brake surfaces remain absolutely flat in all operating states, the service life of the pads is also significantly prolonged.



#### Conventional disc



Greater risk due to “umbrella effect”

#### INTEGRAL DISC



Radial expansion significantly reduces the risk!



# INDIVIDUAL AND VARIABLE: OPTIONS FOR THE SAF MODUL SUSPENSION SYSTEM

## For more efficiency in your business

### Options for the axles

#### ABS SENSING



- Exciter ring and sensor holder: As standard and preinstalled
- ABS/EBS sensing: Can be activated with simple and reliable plug connections

#### SAF KILOMETRE COUNTER



- Kilometre counter to measure the exact operating life of trailers
- Simple retrofit installation
- Quick and operationally reliable installation

#### SAF BRAKE CHAMBER



- Complete surface coating
- High-quality internal components
- Fully integrated air connections

#### PAD WEAR SENSING



- Simple retrofit installation
- Can be connected to the trailer EBS or to a separate monitoring and display unit

### Also available:

- Axles with 7 t axle load
- Axles with 12-14 t axle load
- Self-steering axles
- Axles for positive steering

## Options for air suspension systems

#### TWO SIDE AND PENDULUM LIFT



- Individual solution for every application
- Very easy to retrofit
- Other variants on request

#### CROSS MEMBERS



- Longitudinal cross member for both rigid and self-steer combinations

#### ADJUSTABLE HANGER BRACKET



- Simplified track adjustment through eccentric washer
- Drain hole for immersion painting of chassis frame
- Also available in stainless steel
- Screw-on versions available

#### ALUMINIUM HANGER BRACKET



- For trailers with aluminium chassis

If you have any questions about technical combinations, ask your SAF-HOLLAND sales contact or your trailer builder

# SAF MODUL – AS VARIED AS THE TRANSPORT BUSINESS ITSELF

Anyone who wants to succeed in the transport system today and stay ahead of competition, has to be able to offer particularly convincing, individual solutions going beyond standard repertoire: Transport services that are first and foremost profitable, letting you stay on the road to success. One of the main advantages of the SAF MODUL suspension system is its versatility. It allows for a myriad of combinations and applications: SAF MODUL will always fit your needs regarding road conditions and transport goods.

## Deployment recommendations and classification of component criteria

Application	Axle load up to 105 km/h [t]	Spring centre [KE = No limitations] [mm]	Trailing arm [width x breadth] [mm]	Axle body [S = Standard] [V = enforced]	Air bag [Diameter] [mm]	Axle seat [S = Standard] [HD = Heavy Duty]	Notes
Standard Western Europe / On-Road-Use	9	KE	100 x 51	S	300 / 350	S	For Container and Coil vehicles: Quick release valve or Arresting cable
	11	≥ 1100	100 x 51	S	350	S	
		KE	100 x 43/43	S	350	HD	
Mega-Trailer	9	KE	100 x 60	S	350	S	Longstroke
	11	KE	100 x 54/54	S	350	HD	
Eastern Europe or comparable condition	9	≥ 1100	100 x 51	V	350	S	For Container and Coil vehicles: Quick release valve or Arresting cable
		KE	100 x 43/43	V	350	HD	
	11	≥ 1100	100 x 51	V	350	S	
		KE	100 x 43/43	V	350	HD	
Tipper Western Europe	9	KE	100 x 51	V	350	S	Quick release valve or Arresting cable
Tipper Heavy Use	9	≥ 1100	100 x 51	V	350	S	Quick release valve or Arresting cable
		KE	100 x 43/43	V	350	HD	
	11	KE	100 x 43/43	V	350	HD	
	12	KE	100 x 43/43	V	350	HD	
Logging	9	KE	100 x 51	V	350	S	Quick release valve or Arresting cable
	11	KE	100 x 43/43	V	350	HD	
	12	KE	100 x 43/43	V	350	HD	

Please contact your SAF-HOLLAND representative or vehicle manufacturer to identify your ideal suspension system