

# AIR SUSPENSION SYSTEMS



NOW **LIGHTER**  
AND **STRONGER** THAN EVER..



**TRANSPEC**  
ENGINEERED TO LAST



BPW Transpec is a wholly owned subsidiary of BPW Bergische Achsen KG Germany and has sold and serviced the full range of BPW axles and trailer suspensions in Australia for nearly 60 years.



## BPW TRANSPEC

All supplied BPW products and components are fully backed and serviced nationally through BPW Transpec branches and BPW authorised sales and service outlets.

The BPW Transpec engineers have also customised certain axle and air suspension components for superior performance under Australia's exacting and varied transport conditions, which are assembled at the company's Melbourne production facility.

Its Engineering Department, with the use of state-of-the-art CAD systems, provides expert technical solutions on the selection and fitment of all BPW products to ensure that all customers receive the best possible operational and payload results.

So, when considering your axle and air suspension choice, weigh up the support and real long-term operational savings you'll achieve by using the fully integrated BPW air suspension and axle system.

## BPW Air suspensions

BPW offers a comprehensive range of trailer air suspensions designed to perform under various operating conditions, from low tare weight configurations for highway applications to heavy duty off-road models up to 14 tonne per axle capacity.

BPW air suspensions are ADR approved and have been customised to suit Australian conditions. BPW axle/air suspension systems are available to suit various tyre sizes, trailer lengths and widths.

BPW was first to introduce a fully integrated axle, air suspension and braking system – all designed and engineered by BPW to work in harmony with unsurpassed component compatibility and performance.

*“The integrated and modular BPW-designed trailer air-suspension and axle systems offer the best in on-road safety, the best in overall reliability and the lowest whole-of-life operating cost. In short, a more complete system that delivers the ultimate in performance.”*



**Disclaimer:** The information and advice contained in this brochure including prices and specifications are current and correct as at 1 March 2014 but may be subject to change. BPW Transpec shall not be liable for any changes that occur after that date. It is your responsibility to contact your BPW Transpec branch or representative to ensure that all information and advice is up to date before placing an order.

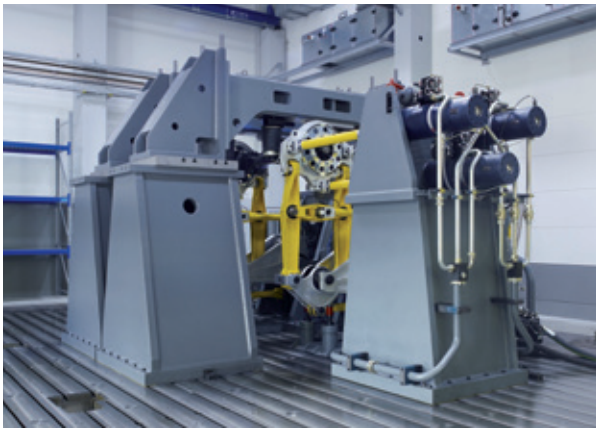
# BPW AIR SUSPENSION SYSTEMS – DESIGNED TO STAY ON THE ROAD



Making trailer running gear systems even safer, lighter and more maintenance-friendly continues to be the driving force behind the BPW design and development activities. Apart from pioneering innovations, the engineers at BPW continually come up with a variety of new product improvements, such as the new Airlight II air suspension system, which ensures superior cost-effectiveness for all customers.

Like all of the BPW products, the new Airlight II air suspension system was put through an extensive phase of testing and trials before its series launch. After all, uncompromising quality requires an uncompromising series of trials and test programs.

Months of trials on the very worst of roads with mud and mire in Europe, heat and fine dust on demanding corrugated roads in the Australian desert, and extremely-low temperatures on the polar icecap in northern Sweden is just the beginning of producing the industry's best air suspension systems.



## Tough testing under extreme conditions

BPW carries out testing in its test and development centre at company headquarters in Wiehl, where BPW has a 12-channel module test rig. On a real-time basis all possible sources of stress on complete running gear systems in road operation – such as vertical, shear and longitudinal forces or braking, steering and pitching moments – are perfectly simulated and analysed. In the testing process, six massive clamping supports, made of welded steel plates, grip the trailer's suspension frame on all sides like colossal pincers. The machine puts the test object through up to 40 movements per second; until now this kind of testing has been applied only to passenger cars.

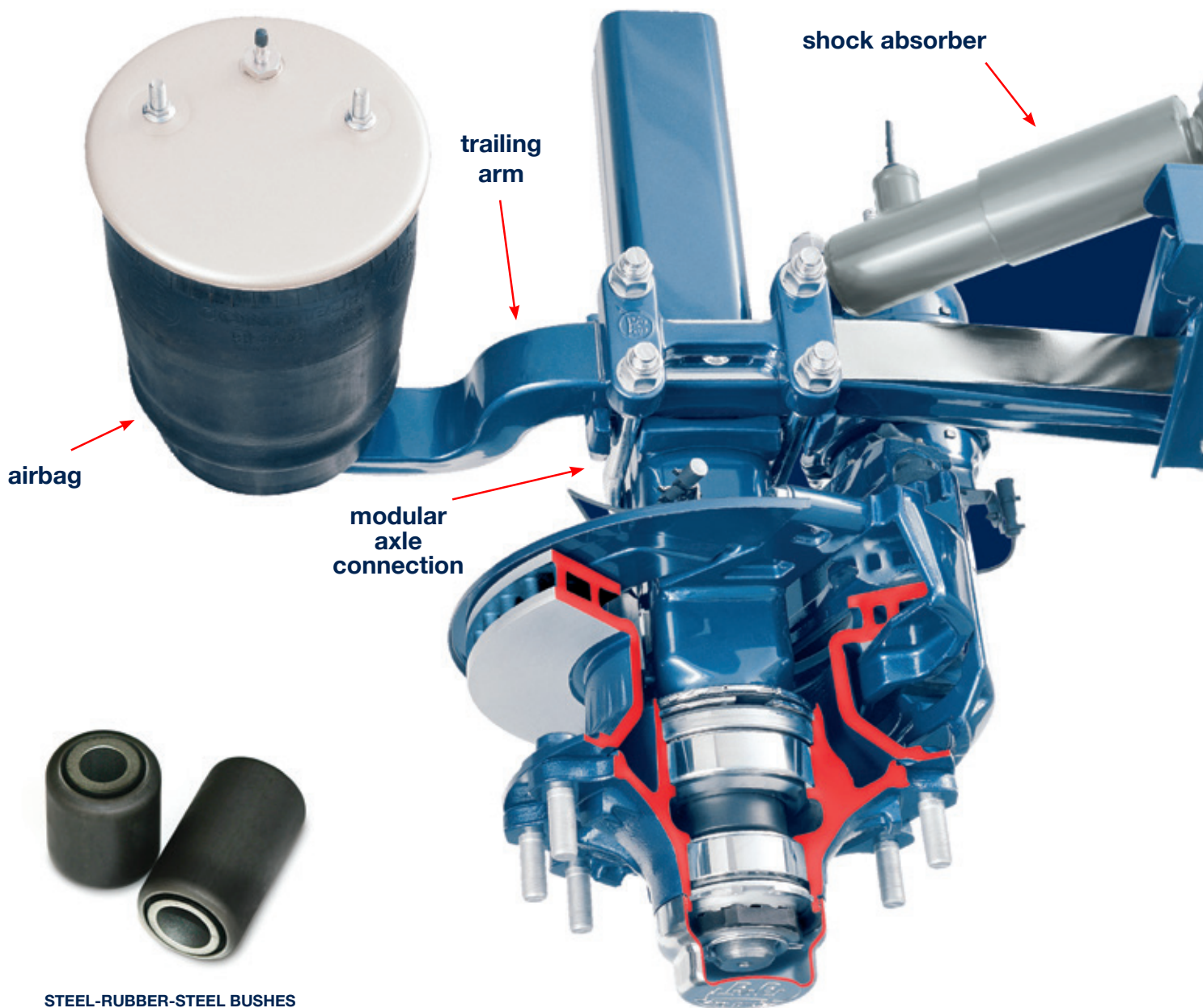




# PRECISION, A METICULOUS APPROACH

BPW offers a range of airbag suspension models which are optimised to suit a large variety of operating conditions. The new BPW Airlight II range suits highway conditions and supersedes the AL and SL range.

The Heavy Duty range of O, OM and OT models continue to cover more extreme road conditions and for axles loads up to 12 tonne. BPW also offers an extra heavy duty suspension with axle loads up to 14 tonne for mining operations.



The principle components of a BPW air suspension system are: the air suspension hanger brackets (1), shock absorbers (2), trailing arms (3), airbags (4), and the axle connection (5).

## Modular system

BPW airbag suspensions have been designed with the philosophy that equipment must have lowest possible whole-of-life costs. The similarities between BPW and other brand air suspensions are only superficial, the many differences are in the details of suspension component design and selection, and quality of workmanship, the small things that are all important when adding up the total cost of the running gear over the life of the vehicle.

## Soft ride characteristics

Because the BPW airbags are fitted further behind the axle than with other suspensions, the ride characteristics of the BPW trailer air suspension delivers superior driver comfort and increased freight protection. The trailer's structural fatigue is reduced as well as lowering the stress on the road surface and the tyres.

## Trailing arms

The BPW trailing arms are highly flexible spring steel elements that are hot-rolled from one piece, after which they are shot-peened, zinc-phosphated and cathodically dip-coated. They absorb much of the flexural forces and reduce both the torsional forces into the axle beam and the stress on the trailer frame.

The rigid connection of the trailing arm springs to the axle beam forms a 'U'-type stabiliser to minimise lateral movement and give progressive roll stiffness. This offers greater confidence to the driver when cornering thereby improving safety and handling. Fabricated trailing arms rely on a large bush to deal with torsional stresses. When these large bushes compress to their maximum yield point, remaining stresses are transferred into the trailer frame. Flexible trailing arms have a greater yield capacity.

## Heavy duty shock absorbers

The BPW trailer suspension uses purpose-built, heavy duty, high efficiency shock absorbers, with high oil volumes keeping operating temperatures to a minimum, therefore maintaining dampening performance, extending service life and tyre life.

## Airbags

The outstanding ride characteristics of the BPW airbag suspension are due in most part to the airbags themselves.

BPW uses rolling-lobe airbags because of their spring characteristics. They roll neatly over the piston during compression. BPW airbags are firmly crimped into the top plate and are bonded onto the clamping plate at the bottom by vulcanization, which means they are guaranteed to be air-tight. The bump-stop, integrated onto the bottom plate, protects against damage when the bags are vented.

The piston is made from a sturdy glass-fibre reinforced plastic with a steel support to give reduced weight and resistance to corrosion.

## Steel-rubber-steel bushes

BPW long-life steel-rubber-steel bushes offer low maintenance mounting of the trailing arm. The axle is precisely located which improves handling and tracking and therefore both tyre wear and operating costs are reduced.

## Hanger brackets

BPW air suspension hanger brackets transfer all control, braking and acceleration forces from the axle to the trailer frame. BPW air suspensions are offered with a variety of hanger options. Various heights are also available to give trailer designers the freedom to optimise their choice of designs. BPW hangers are offered in both alignable and non-alignable configurations depending on the suspension model.

## Servicability

The BPW trailer air suspension has been designed to be service friendly with ease of access to all major components, as well as a high degree of parts interchangeability between suspension models. Reduced downtime and higher vehicle utilisation is the result.

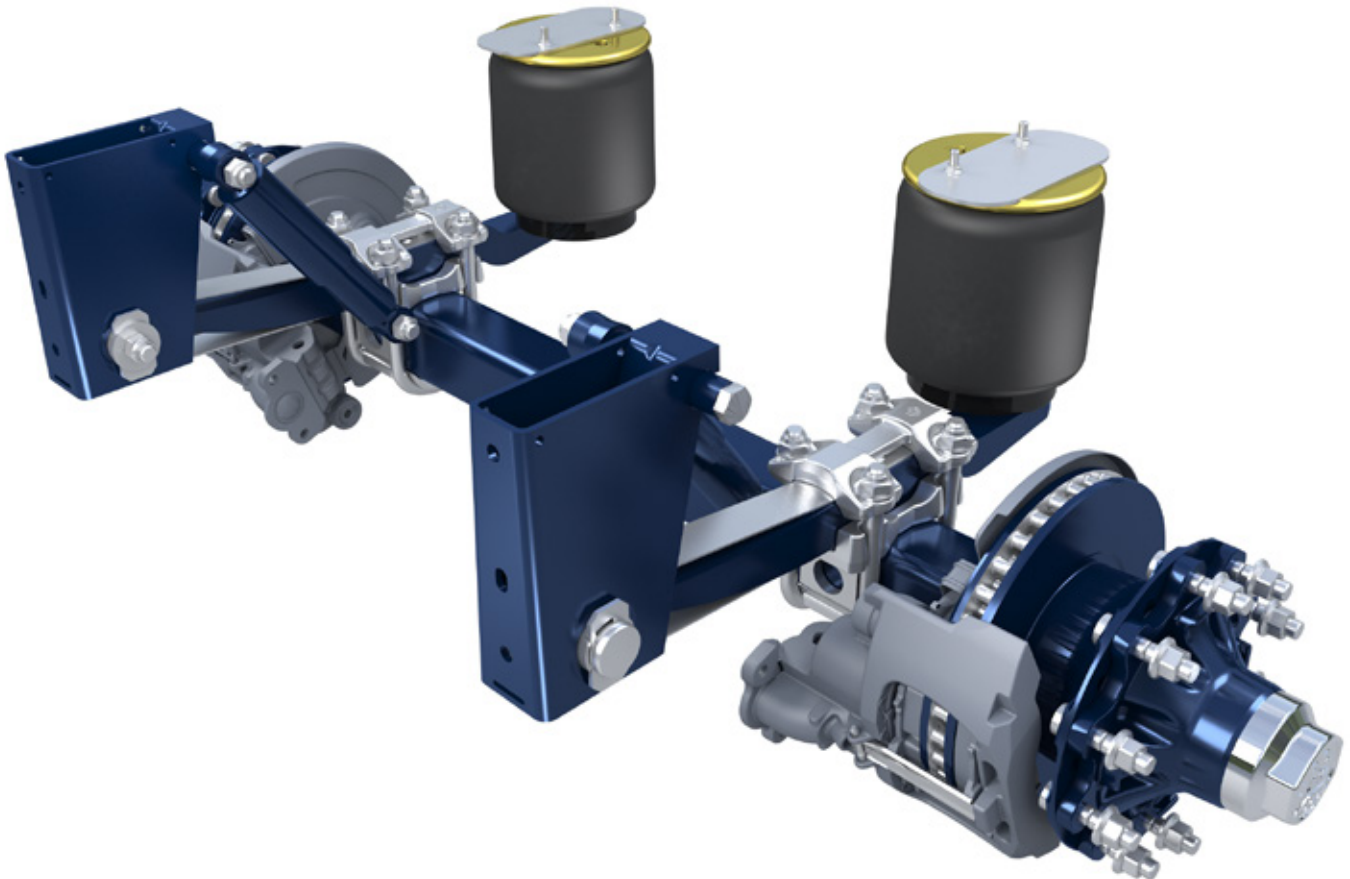


air suspension hanger bracket



# BPW AIRLIGHT II AIR SUSPENSIONS

BPW Airlight AL II Highway series suspensions have highly efficient monoleaf 70mm wide trailing arm springs, pressed hangers, webbing sling axle restraints (wrapped around the shock absorbers) and are supplied as standard with BPW Type 30 or 30K airbags. On most Airlight II models, cable catchstraps and Type 36 airbags are available as options.



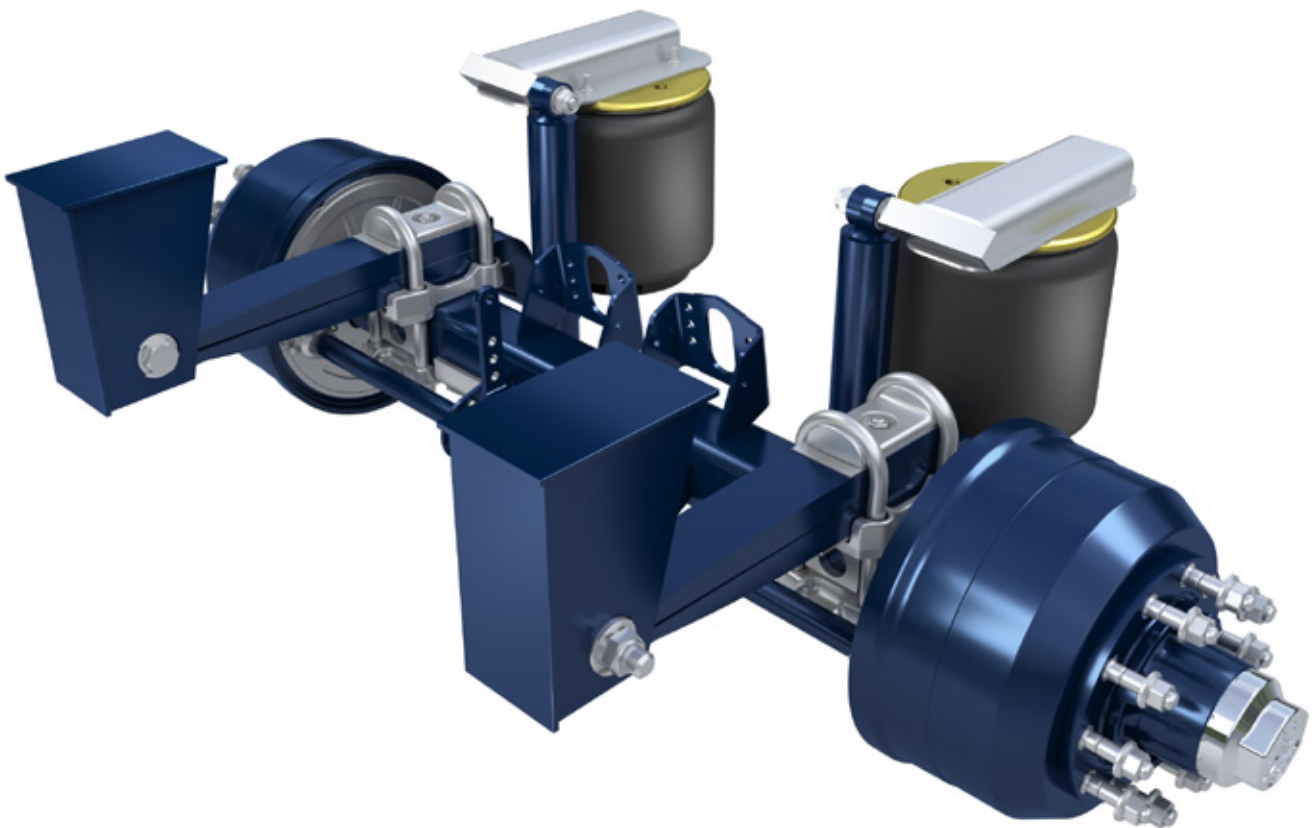
## Features and benefits of BPW Airlight II air suspensions:

- Less tare weight yet stronger components
- Greater roll stiffness than previous Highway Series suspensions thanks to the new trailing arm
- Flexible trailing arm offers best possible wheel control, safer driving characteristics with reduced stress on the trailer chassis
- Highest driving comfort and sensitive 'soft-ride' handling of the cargo
- Easy to service - thanks to the modular design
- Easy to install - due to the narrow, straight hanger brackets
- Excellent stability characteristics and optimum roll resistance
- Reduced tyre wear due to the axle control of the steel-rubber-steel bushes
- Optimum axle load equalisation
- National off-the-shelf genuine spare parts for minimal downtime

(Available with either BPW drum or disc brake technology)

The BPW Heavy Duty airbag suspension range is well proven, and is recommended for on/off road conditions. For decades the BPW O, OM and OT models have been refined to an almost 'bullet-proof' status in extreme operating conditions both here and overseas.

BPW Heavy Duty airbag suspensions are characterised by double-leaf 100mm wide trailing arm springs, heavy duty fabricated hangers, cable catch straps and the large BPW Type 36 airbags, all supplied as standard equipment.



## Features and benefits of BPW Heavy Duty air suspensions:

- Robust design.
- Excellent stability characteristics and optimum roll resistance
- Flexible trailing arm offers best possible wheel control, safer driving characteristics with reduced stress on the trailer chassis
- Highest driving comfort and sensitive 'soft-ride' handling of the cargo
- Easy to service - thanks to modular design
- Easy to install
- Reduced tyre wear due to the axle control of the steel-rubber-steel bushes
- Optimum axle load equalisation
- National off-the-shelf genuine spare parts for minimal downtime

(Available with either BPW drum or disc brake technology).



# SQUARE AXLE BEAMS

## Greater reserves of safety under all load conditions

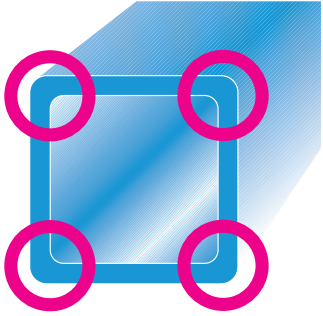
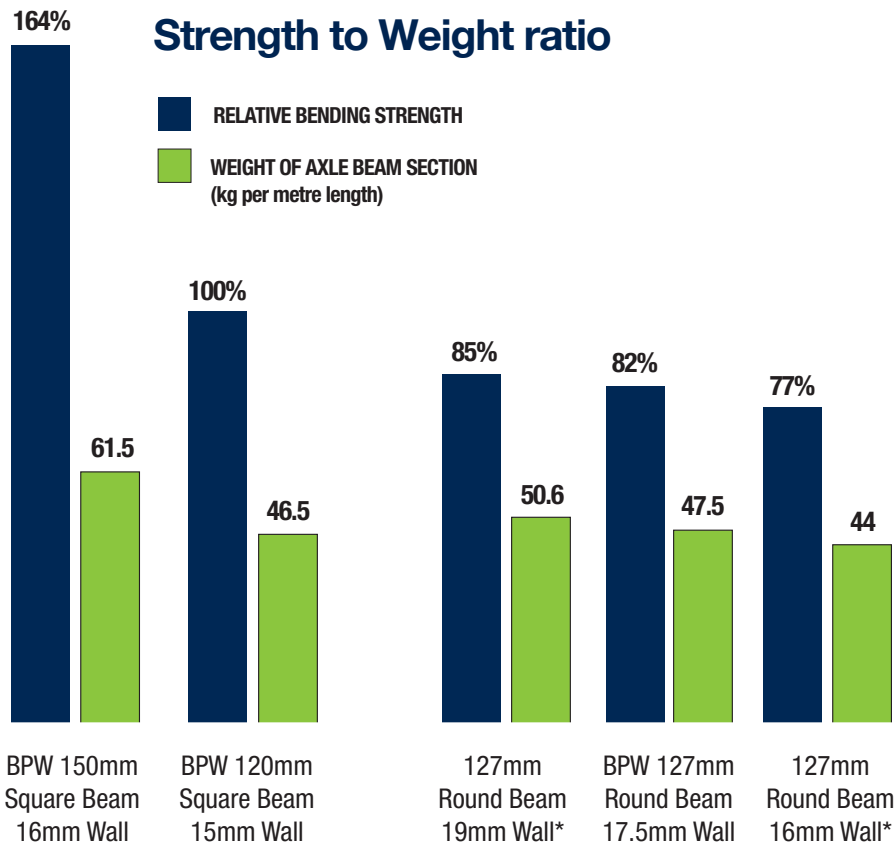
### Square axle beam

Ongoing research and development at BPW has resulted in the use of square axle beams with BPW trailer air suspensions. An axle beam needs to be able to withstand not only the bending stresses due to the applied load, but also the bending and torsional stress due to the brakes and air suspension trailing arms. A square section axle beam is more efficient in distributing these stresses, therefore it is stronger for any given axle beam weight when compared with a round beam. The BPW square section axle beam gives the operator greater roll stability, better tracking and greater safety factors when compared to round beam axles.

**The BPW Square Axle gives the best 'Strength to Weight Ratio' for Airbag Suspension applications**

### Optimum axle profile

This is due to several factors: the square cross-section, the shaping of the stub axle, the material specification and the quenched, tempered and hot extruded stub axles which are flash butt welded to the axle beam.

**Square Beam**

**Round Beam**

Calculated using geometrical details of axle beams, assuming all beams are made from material with the same strength.

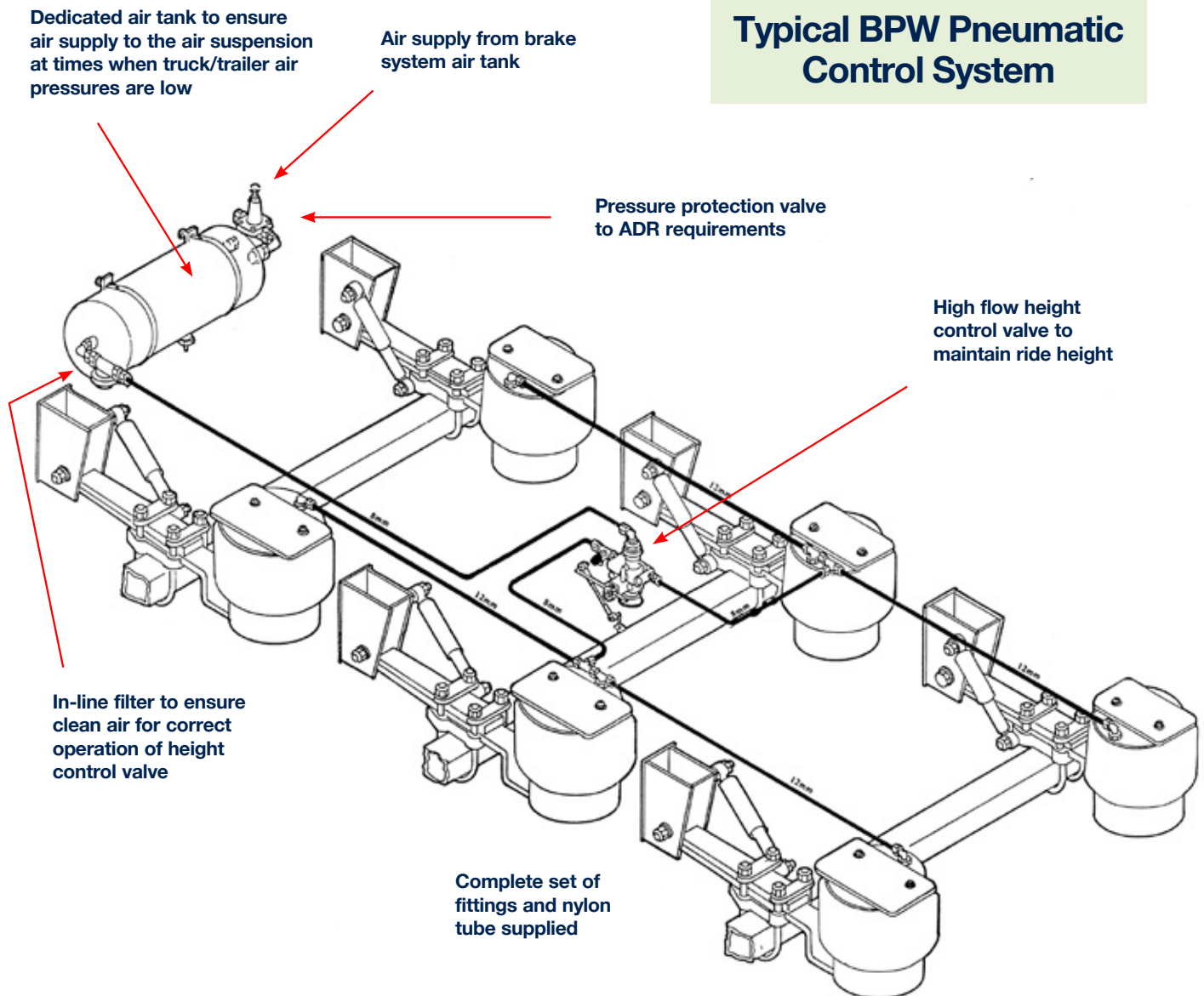
\*Not available from BPW



# PNEUMATIC CONTROL KIT



The BPW Airbag Suspension pneumatic control system employs a single high flow height control valve to ensure pressure equalisation giving a constant ride height for all load conditions. BPW Air Suspensions are supplied with a complete pneumatic control kit.



## (Optional) Raise & Lower system

BPW offers a raise/lower valve system which enables the height of the trailer to be matched to various dock levels, saving costly loading/unloading times.

## Reset-to-Ride

BPW Transpec also offers an optional 'reset-to-ride' raise/lower system, which automatically resets to ride height once the trailer brakes are activated. This function can be incorporated into the Transpec EBS system when fitted.



## Reduce your operational costs with BPW Axle Lift...

As an option, multi-axle trailers can be equipped with an axle lift. Operators have found that the benefits of the BPW Axle-Lift include reduced fuel consumption, improved brake balance when unladen and reduced tyre wear.

The Axle-Lift Systems are available with 'side-lift', 'centre-lift' or double booster-style side lift configurations, to suit the particular trailer application and can be installed on up to two axles of the tri-group.

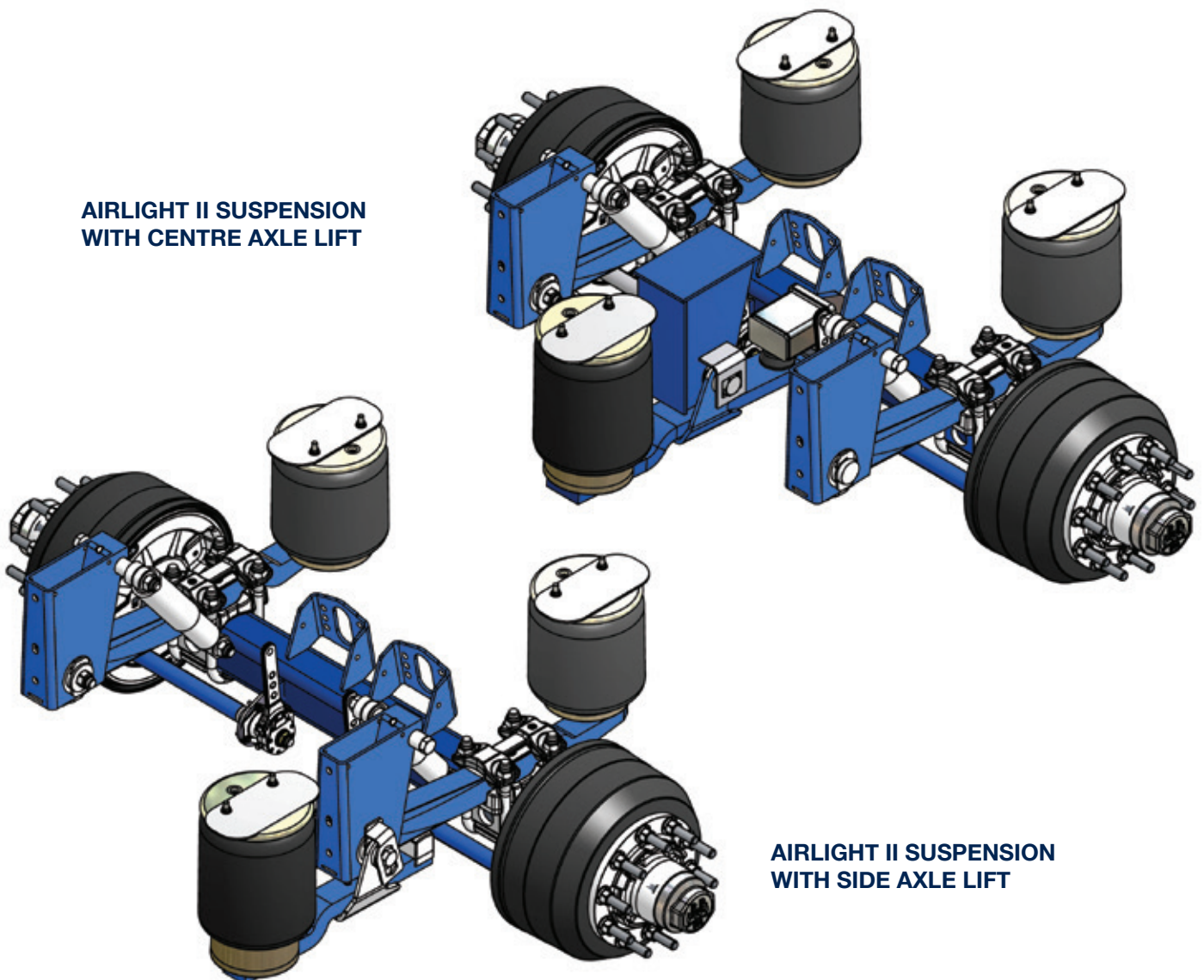
All BPW Axle-Lift Systems comply with current ADR requirements and are supplied as standard with fully automatic pneumatic controls which lifts and lowers the Lift Axle(s) at the legally prescribed axle loads.

The system has an 'off' switch located in a lockable enclosure as stipulated by the ADRs.

When fitted to a trailer with BPW EBS the Lift Axle(s) is controlled by the EBS and again is lifted and lowered automatically at the legally prescribed axle loads. An 'off' switch in a lockable enclosure is also provided.

The BPW Axle-Lift System is simple to use and can be fitted to most BPW trailer airbag suspensions, in both the 'Highway Series' Airlight II range and the on/off road 'Heavy Duty' range.

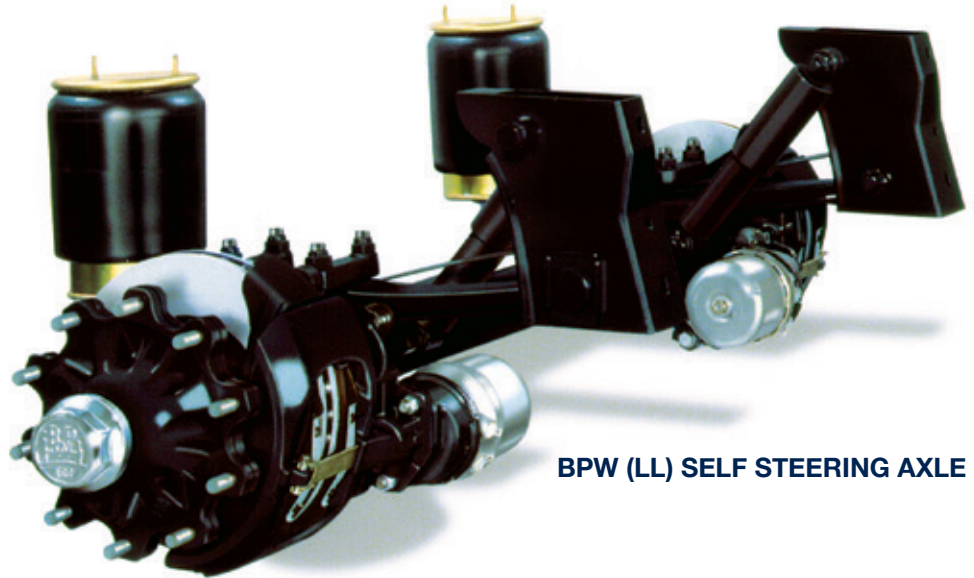
**AIRLIGHT II SUSPENSION  
WITH CENTRE AXLE LIFT**



**AIRLIGHT II SUSPENSION  
WITH SIDE AXLE LIFT**

## Corner safely and smoothly using the BPW (LL) Self Steering Axle

No one wants to lose rubber from their tyres every time they turn a corner. So BPW has developed an axle which allows your tyres to roll instead of slide; the BPW (LL) self-steering axle.



**BPW (LL) SELF STEERING AXLE**

The enormous advantages of the steering axle include better manoeuvrability, reduced wear on all tyres and less fuel consumption. As a result, the BPW self-steering axle is the right economical solution for delivery and distribution trailers, with operations chiefly consisting of journeys in congested metropolitan and city areas.

'LL' is the German abbreviation for 'load-dependent steering stabilisation' and it describes the unique functional principal of the BPW self-steering axle. Conventional steering axle designs require steering stabilisers powered from an external source – this is not the case with the BPW self-steering axle.

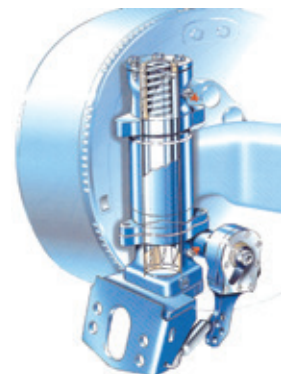
The axle beam and axle stub are connected with undulating thrust bearings via steering pivots. When driving straight ahead the undulations in the thrust washers help keep the wheels pointing straight ahead. The weight of the vehicle presses the undulating contours of the upper and lower thrust washers to keep the wheels on track. The wheels remain stable in the correct straight-ahead position.

When the semi-trailer follows the prime mover unit into a curve, the wheel caster action ensures the wheels turn in accordance with the curve radius (the thrust washers slide over one another). The self centering force generated by the thrust washers increases with axle load, which is what is required.

As a result, a steering angle (of 8 to 27 deg, depending on the axle type) is achieved according to the load, and is entirely controlled by mechanical means. The link connecting the wheels uses a steering lock to prevent the wheels from steering when the vehicle is reversing.

The BPW steering axle means that the trailer corners better and more closely follows the same track as the truck. The lateral tyre forces arising are optimally distributed between all the axles, especially with a tri-axle trailer.

Every axle experiences significantly lower lateral tyre forces; as a result, it has been shown that the life of the tyres on the front axle and the rear axles increases dramatically on a tri-axle trailer when fitted with a steer axle.

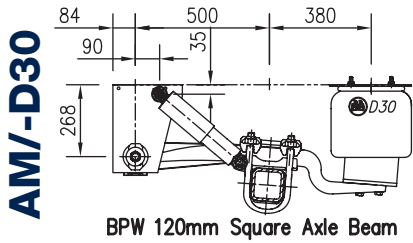


**Undulating pressure bearing in the 'straight ahead' position (left) and 'steering' position (right).**



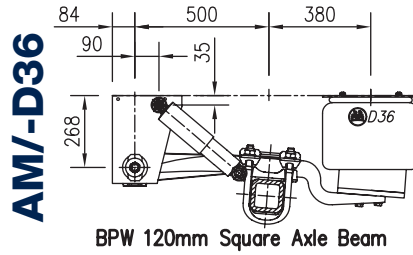
# BPW AIRLIGHT II SERIES AIR SUSPENSION

## Australian range



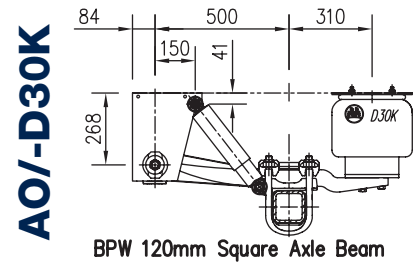
Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
375-395	395	290	305

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	165	AM-0003



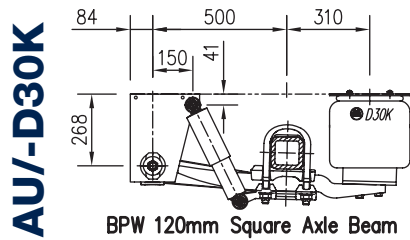
Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
375-395	395	290	305

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	174	AM-0005



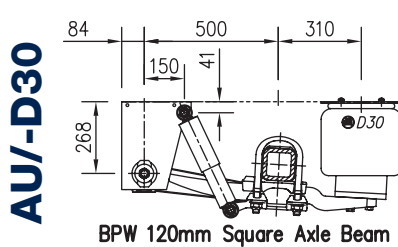
Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
425-455	455	345	360

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	156	A0-0005FD



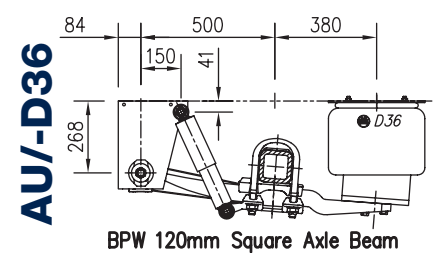
Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
215-250	245-250	130	145

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	160	AU-0004



Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
245-265	265	160	175

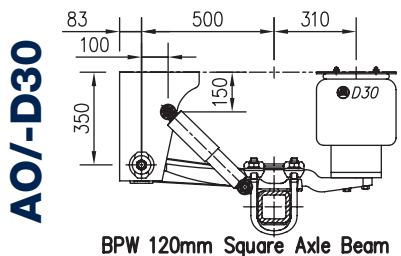
Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	162	AU-0011



Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
245-265	265	160	175

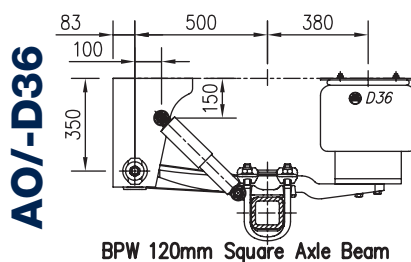
Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	177	AU-0013

## Special Configurations



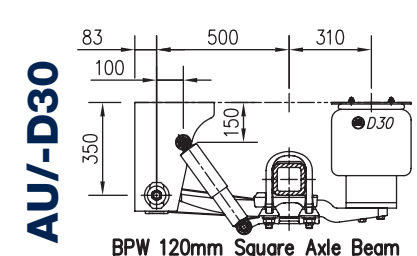
Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
500-550	520-550	405	420

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	165	A0-0011



Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
500-550	530-550	415	430

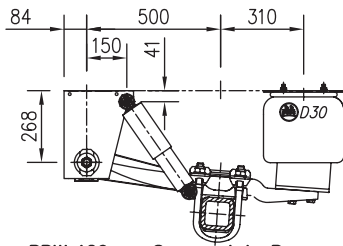
Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	179	A0-0014



Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
280-335	305-335	190	205

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	169	AU-0014

**AO/-D30**

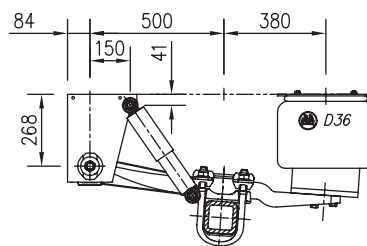


BPW 120mm Square Axle Beam

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
460-480	480	375	390

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	158	A0-0004FA

**AO/-D36**

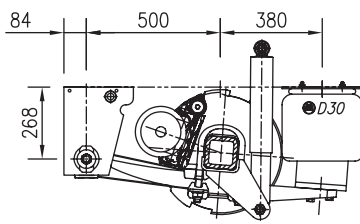


BPW 120mm Square Axle Beam

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
460-480	480	375	390

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	172	A0-0009

**AU/-D30**

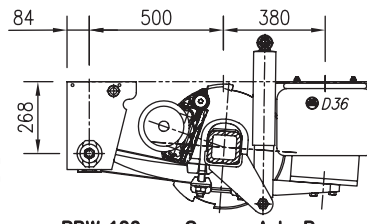


BPW 120mm Square Axle Beam and BPW Disc Brake

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
245-265	265	160	175

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	184	AU-0002FA

**AU/-D36**



BPW 120mm Square Axle Beam and BPW Disc Brake

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
245-265	265	160	175

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	195	AU-0017

## Technical specifications

**TARE WEIGHT** includes axle seats, webbing sling axle restraints and airbag mounting plates. For piping kit with 60 litre air tank add 25kg per suspension group.

**RIDE HEIGHT** is measured from the centre of the axle vertically up to the top of the hanger.

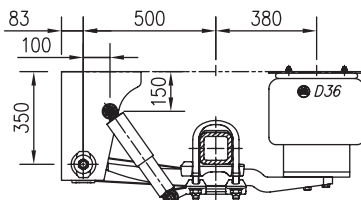
**CAPACITY** is given as kg per axle module for suspensions fitted at 950mm spring centres on axles fitted with dual tyres.

**AXLES** shown are BPW 120mm square with 15mm wall thickness & welded seats.

**AXLE RESTRAINTS** All Airlight II air suspensions are fitted with webbing sling axle restraints for stroke limitation. Webbing slings are fitted to the shock absorbers and are held in place with rubber ring retainers. Cable Catchstraps are available as an option in lieu of webbing slings.

**DISC BRAKES** All the BPW Airlight II overslung suspensions shown suit installation onto BPW disc brake axles and BPW drum brake axles. With the underslung range of Airlight II suspensions (ie. 'AU' Series) BPW disc brake axles will suit only suspension configurations shown with BPW disc brake axles.

**AU/-D36**

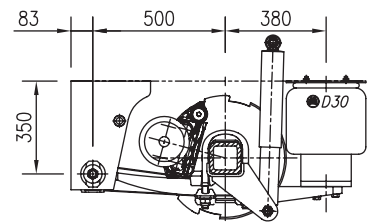


BPW 120mm Square Axle Beam

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
285-335	315-335	200	215

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	184	AU-0018

**AU/-D30**



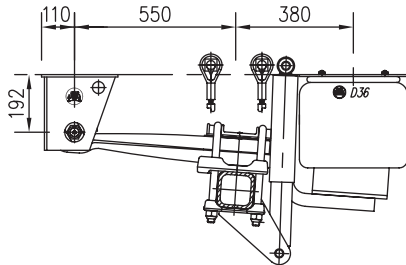
BPW 120mm Square Axle Beam and BPW Disc Brake

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
285-335	315-335	200	215

Capacity (kg)	Tare Weight/Axle Module (kg)	Drawing Number
9,000	191	AU-0016FA

## Australian range

### OM/-D36



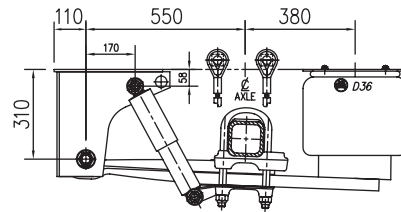
BPW 120mm Square Axle Beam

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
370-400	400	285	300

Capacity (kg)	Tare Weight Per Axle Module (kg)	Drawing Number
10,000	247	OM-0004

### OT/-D36



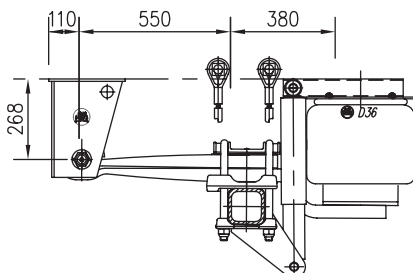
BPW 120mm Square Axle Beam

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
220-270	270	155	170

Capacity (kg)	Tare Weight Per Axle Module (kg)	Drawing Number
10,000	237	OT-0003F0

### OM/-D36



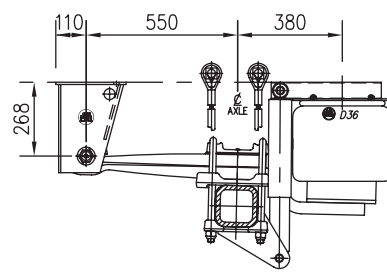
BPW 120mm Square Axle Beam

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
425-465	465	350	365

Capacity (kg)	Tare Weight Per Axle Module (kg)	Drawing Number
10,000	262	OM-0001

### OM/-D36



BPW 150mm Square Axle Beam

Ride Height (Range) (mm)	Ride Height with Axle Lift (mm)	Height Without Air	
		Laden (mm)	Unladen (mm)
450-480	480	365	380

Capacity (kg)	Tare Weight Per Axle Module (kg)	Drawing Number
12,000	272	OM-0001FD

## Technical specifications

**TARE WEIGHT** includes axle seats. Add 7kg per axle for catchstraps axle restraints. For piping kit with 60 litre airtank add 25kg per suspension group.

**RIDE HEIGHT** is measured from centre of the axle vertically up to the top of the hanger.

**CAPACITY** is given as kg per axle module for suspensions fitted at 950mm spring centres on BPW axles fitted with dual tyres.

**AXLES** that are suitable for BPW Heavy Duty air suspensions are: BPW 120mm square beam axles; BPW 150mm square beam axles.

**AXLE RESTRAINTS** Cable catchstraps are supplied as standard on Heavy Duty suspensions.

**DRAWBAR HANGERS** are available for most of the BPW Heavy Duty suspension range, which includes tapered bushes and pin to attach a hinged drawbar.

**SPECIAL CONFIGURATIONS** of BPW air suspensions are available to suit specialised trailer needs. For more details please contact your nearest BPW Transpec office.

The BPW Air Suspension Technical Specifications included in this brochure are correct at the time of publication. Changes to the BPW Air Suspension Technical Specifications herewith may occur in future in conjunction with ongoing BPW product development.

## Arrive safely and reduce costs with genuine BPW parts

BPW sets the global standard for its uncompromising manufacture of premium products which satisfies the most exacting requirements in terms of quality and reliability. Genuine BPW parts are available individually or in repair kits, which contain all required components.



Genuine BPW parts undergo continuous development and offer you the security of knowing that they are designed exactly for your trailer chassis and suspension system.

As 'duty-of-care' and 'corporate compliance' become more important in the running of a business, genuine BPW parts offer peace of mind, with the knowledge that the ongoing safety and legislative compliance of the vehicle is maintained.

### BPW Genuine spare parts:

- are produced in-house with tested OEM quality assurance.
- offer long service life
- offer shorter repair times due to spare parts availability throughout Australia
- are more economical in the long run.



# TRANSPEC

ENGINEERED TO LAST

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