



Pneumatic  
expansion shafts



Mechanical  
expansion shafts



Expansion couplings



Expansion chucks  
and adapters



Friction and  
knife shafts



Shaft handling

# Pneumatic expansion shafts

and safety chucks





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Shaft handling



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# We want you to be successful

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# Pneumatic expansion shaft

## Series A

with individual expansion ledges

Vorwald expansion shafts of the Series A are the standard models with individual expansion ledges, that can be used in nearly all applications. The simple and well designed construction ensures a long service life.

Three expansion ledge types are available for covering all requirements: Lengthwise grooved expansion ledges made of aluminium, expansion ledges made of steel or expansion ledges made of polyurethane. The number and positioning of the expansion ledges in the shaft body are determined by the customer requirements.

The lengthwise grooved surface of the steel and aluminium expansion ledges permits the greatest possible torque transmission for cardboard cores. The smooth surface of the polyurethane expansion ledges permits this force transmission for steel or plastic cores. All Vorwald expansion ledges are designed with a bevel, a "guiding angle", to permit easy push-on and push-off of the material cores. Expansion shafts with expansion ledges are available for cores with an internal diameter in the range from 12.5 to 300 mm.

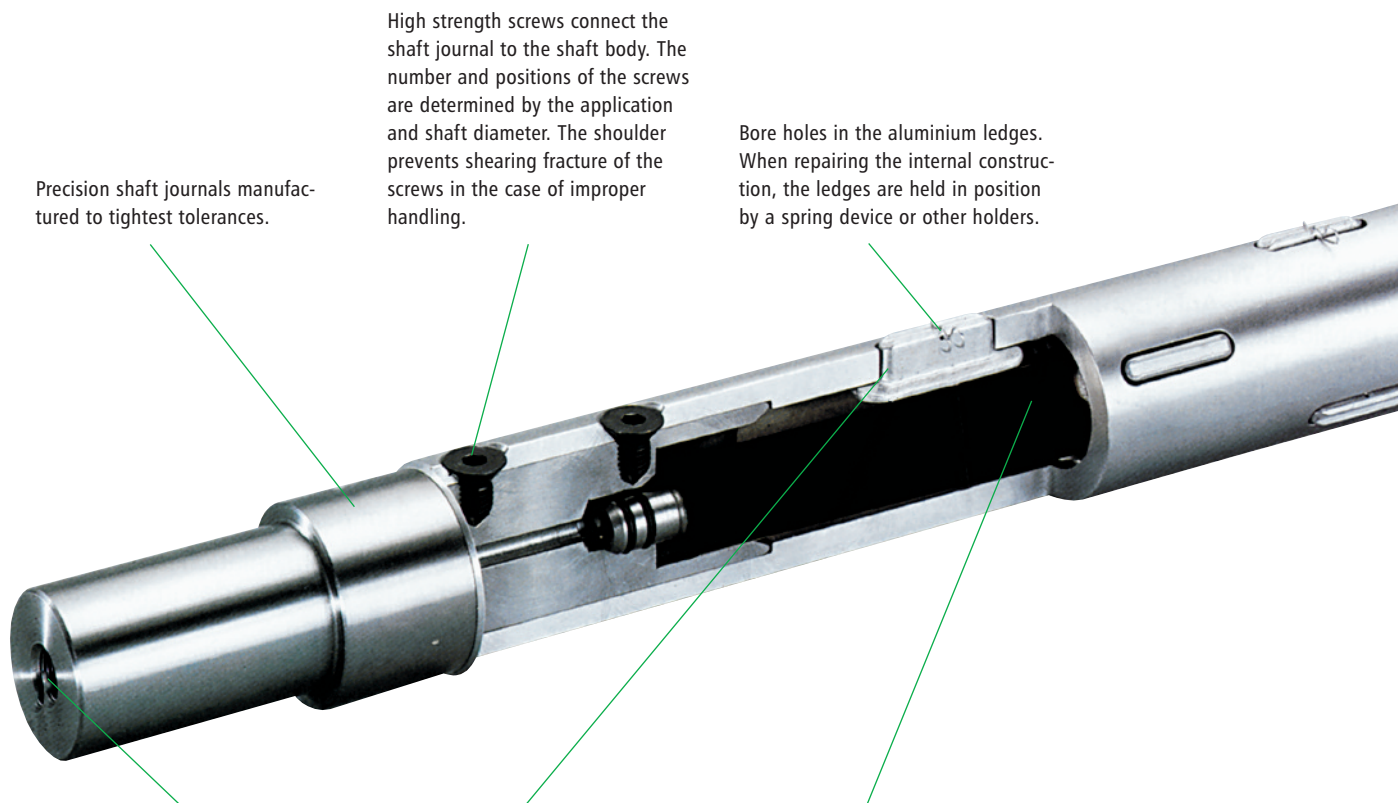
A further very important advantage of the Vorwald expansion shafts is the design of the journals that are attached to the shaft body with screws. The tight dimensional tolerances of the journals provide a positive fit construction. Dismantling of a shaft designed this way is very much simpler than normally encountered with shafts where the journal is attached with set screws. The shaft journals with the same principal dimensions are exchangeable with other Vorwald shaft journals. Machining by the customer to ensure a good fit in the case of a replacement is not necessary.

The shaft bodies can be made of numerous materials with various wall thicknesses – depending on the application. Based on the Vorwald standard, the expansion shafts are customised according to the modular design principle. If the bladder starts to leak, as can happen from time to time with every expansion shaft, the unique internal constructional design makes a repair possible within a very short time. By keeping a complete inner assembly or "repair kit" in stock, a bladder defect can be remedied within minutes.





## Sectional drawing with inner assembly of an expansion shaft, Series A



Precision shaft journals manufactured to tightest tolerances.

High strength screws connect the shaft journal to the shaft body. The number and positions of the screws are determined by the application and shaft diameter. The shoulder prevents shearing fracture of the screws in the case of improper handling.

Bore holes in the aluminium ledges. When repairing the internal construction, the ledges are held in position by a spring device or other holders.

The Vorwald standard inflation and deflation valve is positioned according to the customer specifications. Other valves can also be incorporated on request.

Freely moving expansion ledge without springs

The inner assembly of a Vorwald expansion shaft devised according to the modular design principle makes possible simple replacement of the bladder within a very short time. The replacement is possible after dismantling only one journal.

### Options

- WR Extended expansion range for clamping varying core diameters
- OL Overlapping expansion ledges for narrow web winding
- CB Preliminary centering of the core over the shaft body
- CE Preliminary centering of the core with additional expansion ledges
- Special dimensions are possible on inquiry

### Advantages

- + Simple construction according to the modular design principle
- + Dirt accumulation is minimised
- + High rotation speeds are possible
- + Very short repair times
- + Numerous variants

Available shaft diameters  
from 12.5 to 300 mm



# Pneumatic expansion shaft Series 403

with individual expansion ledges

These unusually robust Vorwald expansion shafts of the Series 403 L are intended for utilisation under conditions of heavy reel weights and large torques.

As with the Series A, these expansion shafts are equipped with individual expansion ledges. The simple construction permits direct replacement of the expansion ledges from outside. Three types of expansion ledges are available to cover all requirements: Lengthwise grooved expansion ledges made of aluminium, expansion ledges made of steel or rubber expansion ledges. The number and positioning of the expansion ledges in the shaft body are determined by the customer requirements.

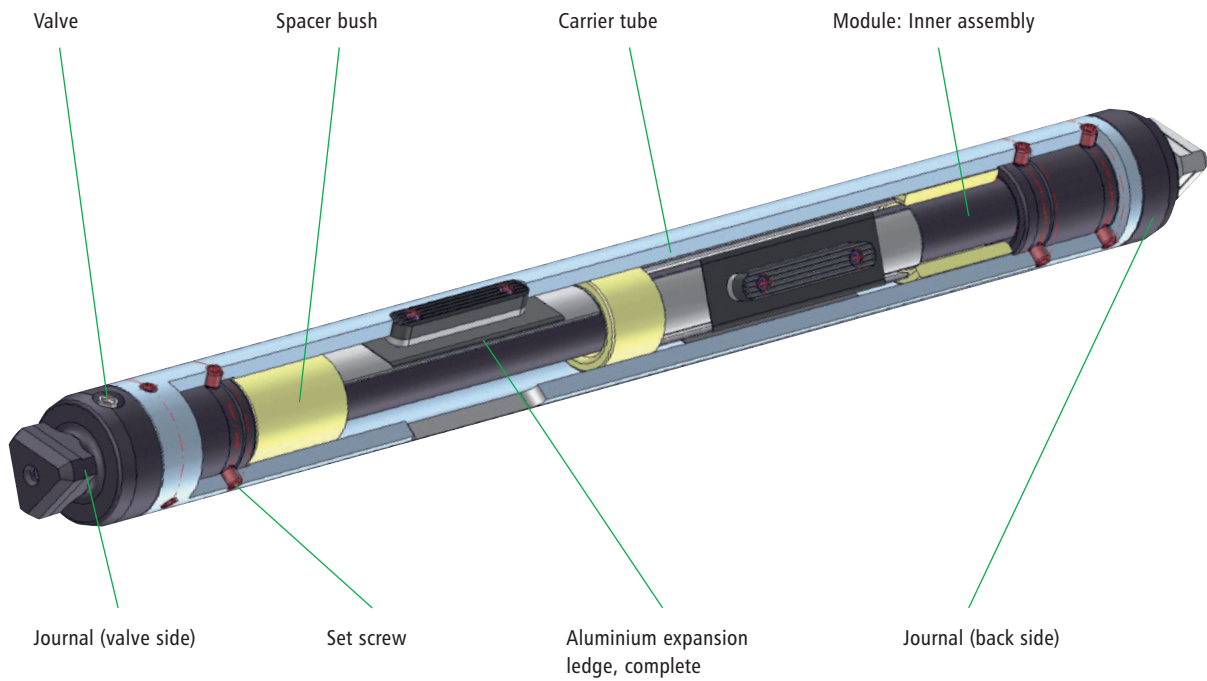
The lengthwise grooved surface of the steel and aluminium expansion ledges permits the greatest possible torque transmission with cardboard cores. The smooth surface of the rubber expansion ledges permits this force transmission for steel or plastic cores.

All expansion ledges are retracted into the carrier body by an internal plate spring, so that the shaft can easily be pulled out of the core. Expansion shafts with expansion ledges are available for cores with an internal diameter in the range from 50 to 300 mm.

Further very important advantages of these Vorwald expansion shafts include the light weight of the shaft compared with its high load carrying capability, by using high strength materials (steel, aluminium, CFK) as well as the easy to maintain construction. If the bladder starts to leak, as can happen from time to time with every expansion shaft, the unique internal constructional design makes a repair possible within a very short time. By keeping a complete inner assembly or a "repair kit" in stock, a bladder defect can be remedied within minutes.



## Sectional drawing with inner assembly of an expansion shaft, Series 403



### Advantages

- + Simple construction according to the modular design principle
- + Numerous variants
- + Heavy reel weights and large torques possible
- + Expansion ledge retracted by spring system
- + Short repair times, by virtue of externally accessible expansion ledges
- + Robust design

Available shaft diameters  
from 50 to 300 mm

Special dimensions are possible on inquiry.



# Pneumatic expansion shaft Series L

with continuous expansion leafs

The Vorwald expansion shafts of the Series L were developed for applications where flexibility is required as well as for use with thin walled cores when deformations could lead to problems.

The obvious advantage of the expansion leafs is the continuous clamping over the entire length of the inside surface of the core. The outer surface of the leafs is available in smooth or lengthwise grooved versions, or as combination. The outer and inner leafs are connected with DIN screws, enabling easy quick replacement.

In particular the version LG with a fixed expansion leaf permits improved true running and clamping of the winding material when winding without a core.

For the standard leaf version the leaf length is chosen to ensure easy servicing, because the journal screw fitting is freely accessible as for the Series A.

The tight tolerances of the shaft/journal connection in combination with the fixing screws ensures trouble-free operation.

The modular shaft construction permits, replacement of the shaft journals without any machining by the customer, provided that the outer shaft diameter is identical.

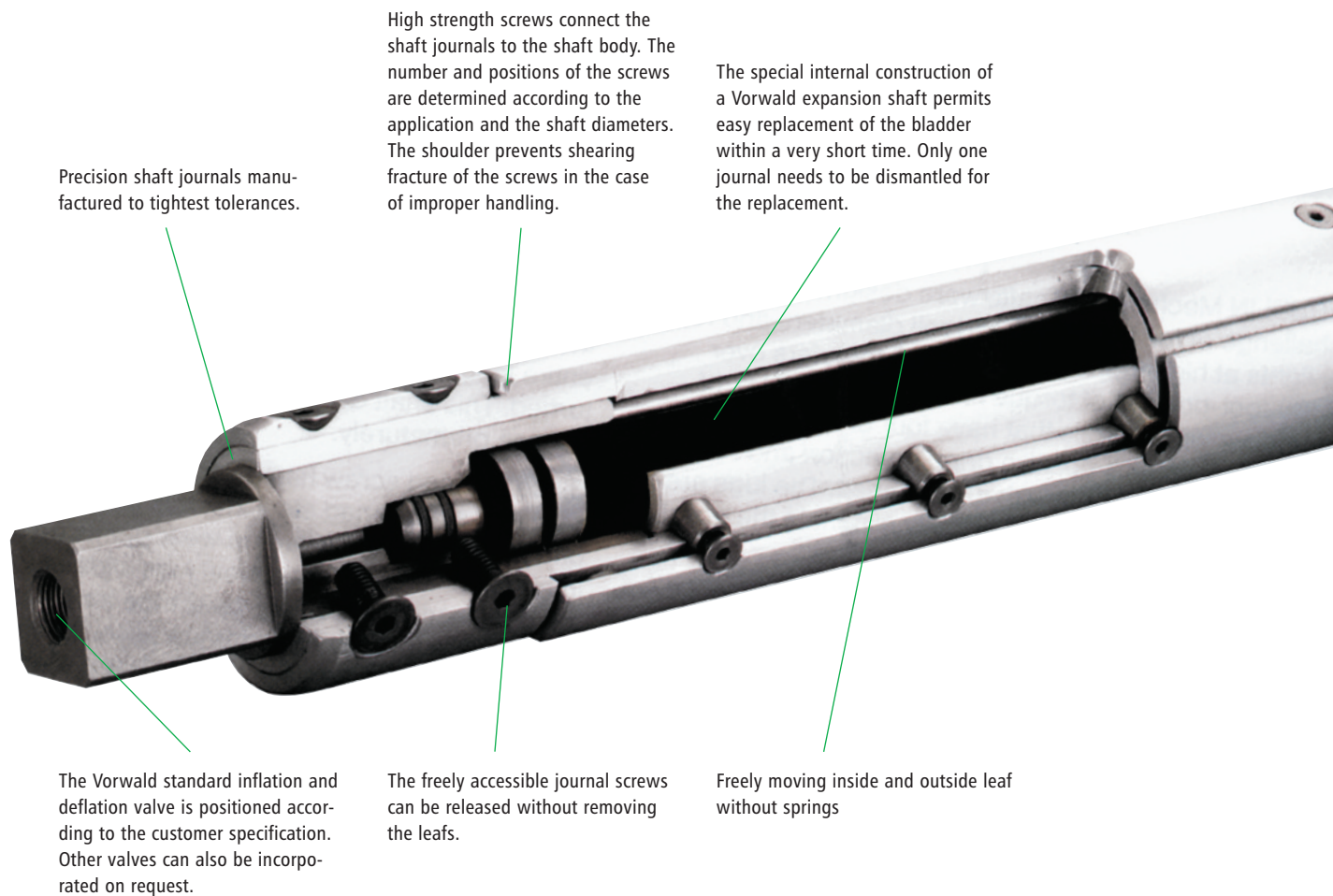
In serial production the shaft body is made of steel, but other materials are possible depending on the required load ratings.

In standard production the leafs are made of aluminium. However, smooth or knurled steel leafs are available on request.

Replacement of the inner assembly is possible within a very short time, by releasing and removing one journal end.



## Sectional drawing with inner assembly of an expansion shaft, Series L



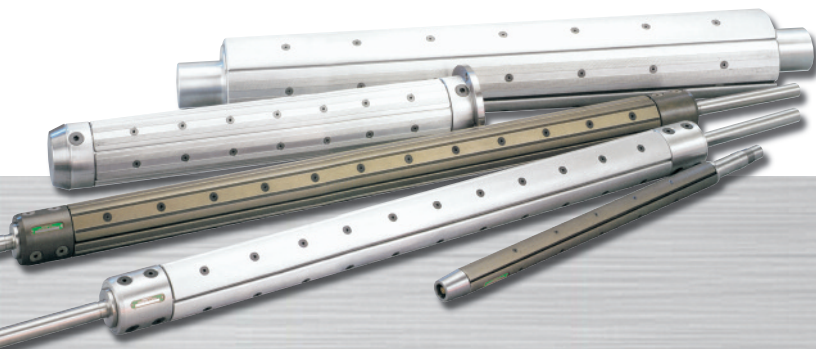
### Options

- Version with smooth or lengthwise grooved expansion leaves
- WR Extended expansion range
- LG With web start clamping
- Special dimensions are possible on inquiry

### Advantages

- + Suitable for winding without core and for thin walled cores
- + Simple construction according to the modular design principle
- + Very short repair times

Available shaft diameters  
from 40 to 300 mm



# Pneumatic expansion shaft

## Series MB

with continuous expansion ledges

Vorwald expansion shafts of the Series MB can be used for wide as well as for the narrowest reels, by virtue of the continuous expansion ledges. This is an economical shaft which can be used for many applications. Its multiple flat bladders are readily accessible from the outside. The standard sizes are 3 inches/75 mm and 6 inches/150 mm. Other sizes are available on inquiry.

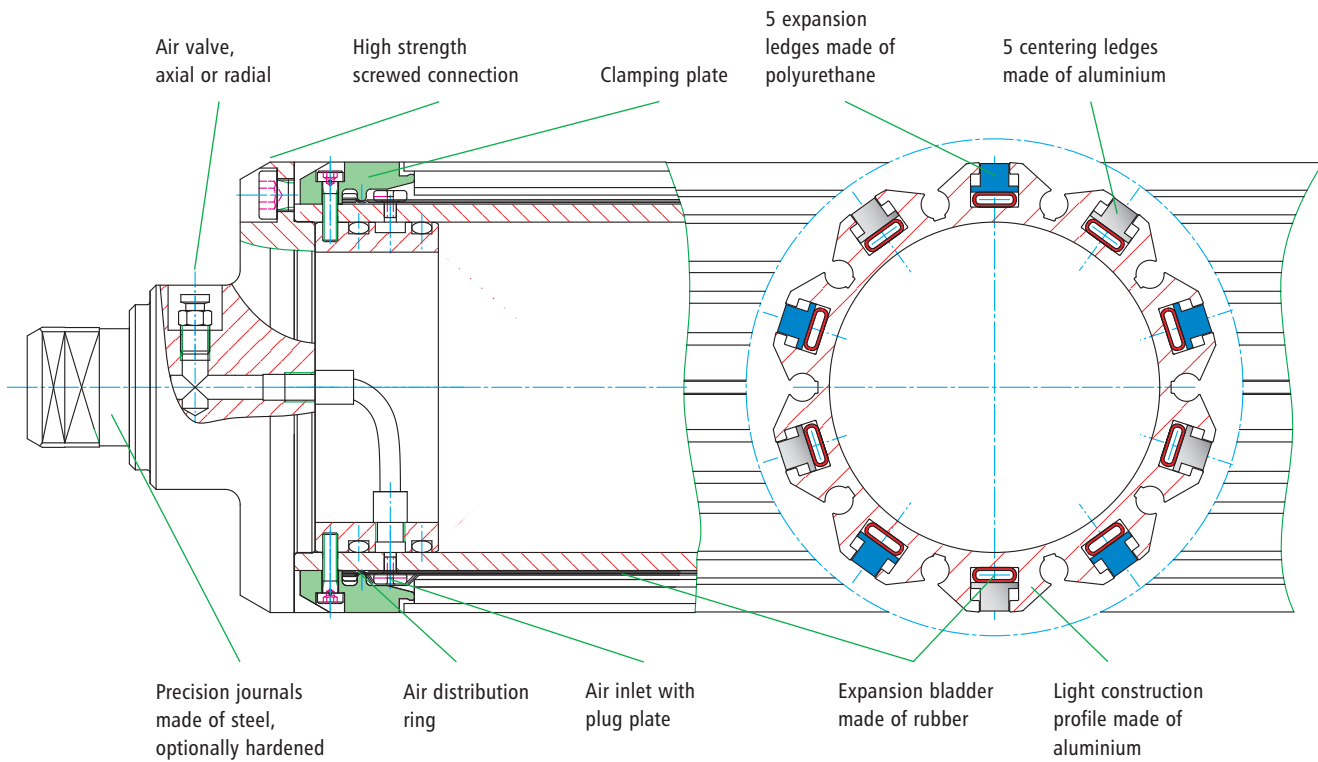
The carrier body consists of a high strength to weight ratio aluminium extrusion profile. The shaft journals are made of steel and are attached with a screw connection so that they can easily be replaced when necessary.

The MB shaft is very light and permits easy handling which can otherwise only be achieved by using the considerably more expensive CFK-shafts.

A clamping and/or a centering function can be assigned to the expansion ledges depending on the actual requirements. The type and number of ledges is selected according to the application and customer requirements. Thus this type of shaft is very flexibly and can also be adapted subsequently to changed conditions such as new core tolerances, higher speeds, etc.



## Sectional drawing of a 6 inch expansion shaft, Series MB



### Options

- Filling valves on both sides
- Expansion ledges made of polyurethane, aluminium or plastic
- Aluminium carrier body with wear proof coating
- Quasi-centering design, matched to your core internal diameter
- Special dimensions are possible on inquiry

### Advantages

- + Simple construction according to the modular design principle
- + Parts subject to wear are readily accessible from outside
- + High rotation speeds possible
- + Low weight of the shaft
- + Secure clamping of the narrowest webs

Available shaft diameters  
from 12.5 to 300 mm



# Pneumatic expansion shaft

## Series 409

with continuous expansion ledges

Vorwald expansion shafts of the Series 409 are suitable for wide as well as for the narrowest reels by virtue of the continuous expansion ledges. The expansion shaft transmits very large torques and has an exceptionally high reel weight carrying capability.

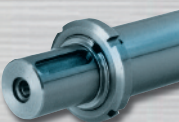
This is an economic and flexible shaft which has a clamping system that is readily accessible externally. It is manufactured in standard sizes of 3 inches/75mm and 6 inches/150mm. Other sizes are available on inquiry.

The carrier body consists either of a high strength aluminium extrusion profile, or of steel for very high load carrying applications. The shaft journals are also made of steel, and they are attached with screws so that they can easily be replaced when necessary.

The weight of the expansion shaft is light compared with the load carrying capability and permits easy handling which otherwise can only be achieved by using considerably more expensive CFK-shafts.

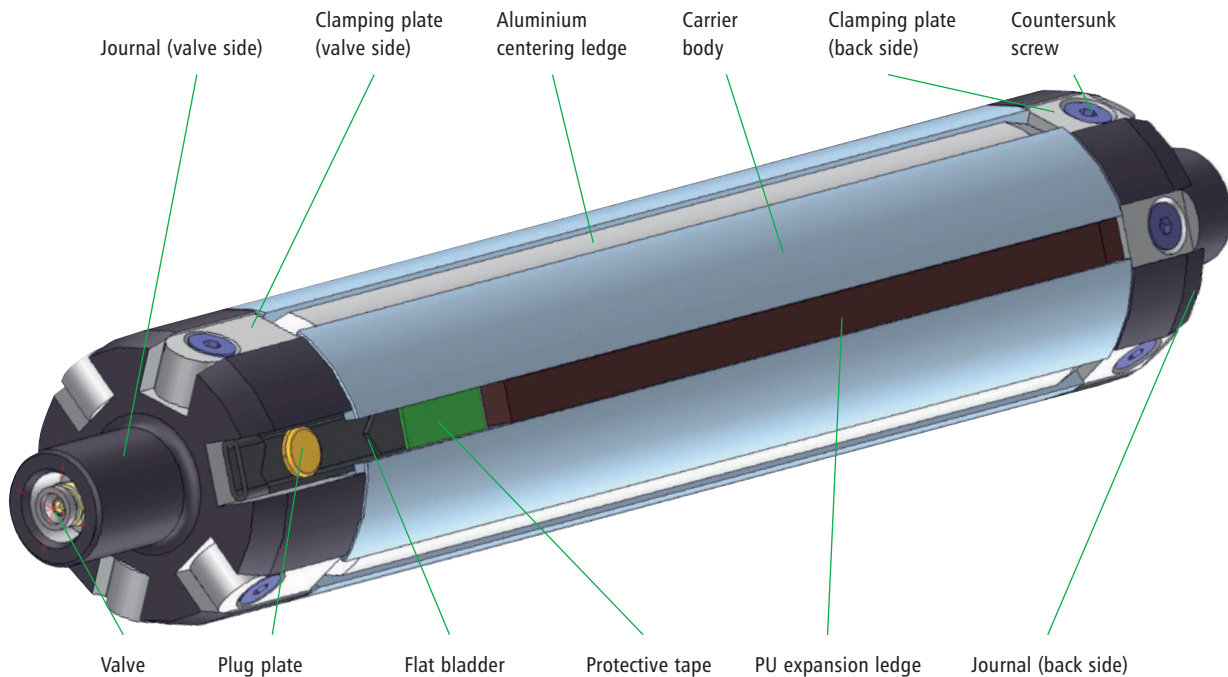
A clamping and/or centering function can be assigned to the expansion ledges depending on the actual requirements. The type and number of ledges is selected according to the application and customer requirements. Thus this type of shaft is very flexibly and can also be adapted subsequently to changed conditions such as new core tolerances, higher speeds, etc.

All expansion shafts described above are available on customer request in special versions and as expansion shafts with bearing on only one side.





## Sectional drawing of an expansion shaft, Series 409



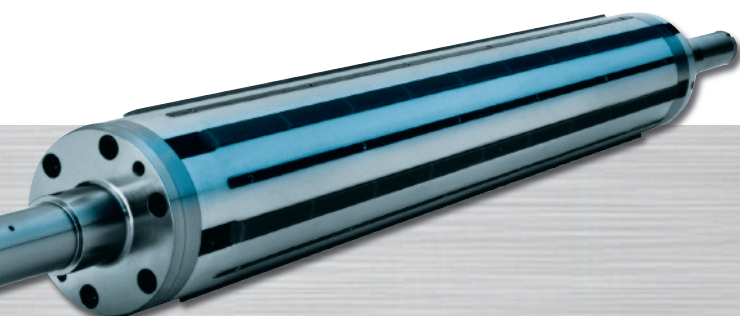
### Options

- Filling valves on both sides
- Expansion ledges made of polyurethane, aluminium or plastic
- Aluminium carrier body with wear proof coating; carrier body also available in steel for high loads carrying capability
- Quasi-centering design, matched to your core internal diameter
- Special dimensions are possible on inquiry

### Advantages

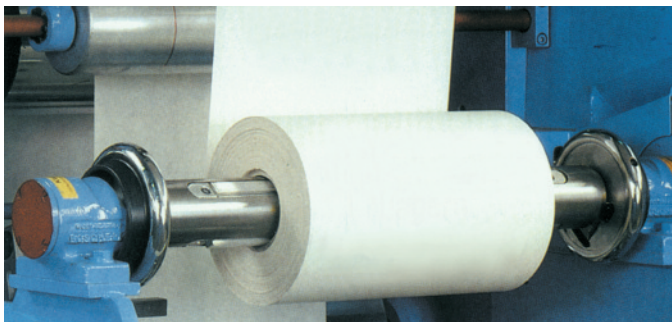
- + Simple construction according to the modular design principle
- + Parts subject to wear are readily accessible from outside
- + High rotation speeds possible
- + Low weight of the shaft
- + Secure clamping of the narrowest webs

Available shaft diameters  
from 40 to 500 mm



# Safety chucks

Flange and foot mounted versions



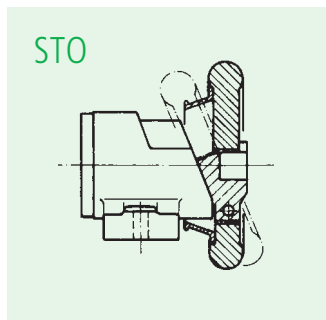
These safety chucks provide security during rewinding and unwinding operations. The locking device can only be opened, in order to take out the shaft when it is stationary at the top. Insertion is very easy via the oblique standing handwheel. For simple applications these safety chucks constitute an extremely economical solution as bearings for expansion shafts. For more exacting requirements and higher rotation speeds the safety chucks can be delivered with replaceable VT-inserts. We are pleased to offer the optimum safety chucks/ expansion shaft combination for your particular application

## Features and advantages

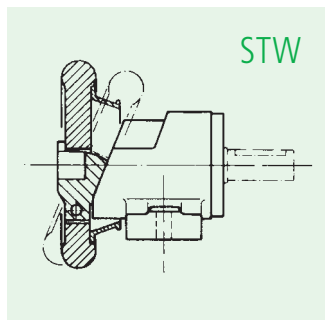
- Safety chucks, self-closing when rotation starts
- Grooved ball bearings for robust supporting
- Foot mounted or flange mounted, with or without shaft end
- Numerous forms of journal take-up available
- Closing mechanism (handwheel) rotates
- Attractive price/performance ratio
- Optionally with replaceable VT-insert
- Optionally with special fittings such as brake, transverse and longitudinal adjustment facility
- No interfacing problems, by purchasing safety chucks and expansion shafts from the same supplier

## Standard safety chucks

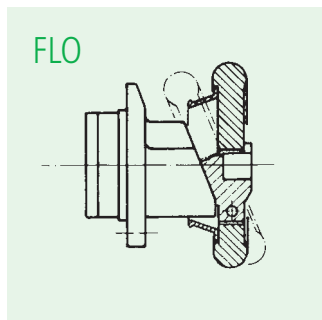
Foot mounted without shaft end



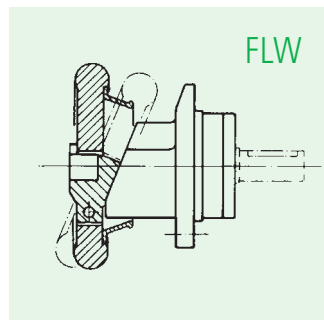
Foot mounted with shaft end



Flange mounted without shaft end



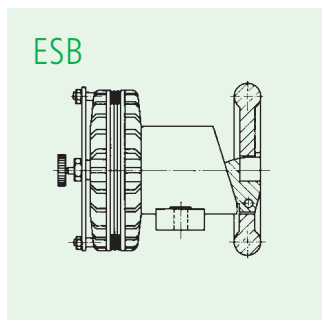
Flange mounted with shaft end



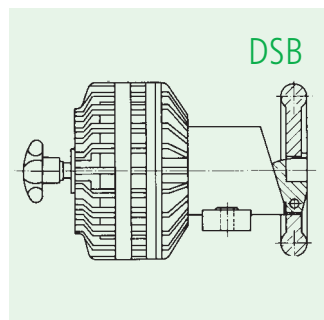
Type	Square size (mm)	Reel weight (kg)	Torque (Nm) max.
14 – 20	14 – 20	150	40
19 – 25	19 – 25	400	120
22 – 30	22 – 30	800	180
30 – 40	30 – 40	1.600	350
40 – 50	40 – 50	2.800	1.100
50 – 80	50 – 80	7.000	2.350
80 – 120	80 – 120	12.000	10.000
120 – 180	120 – 180	22.000	20.000
170 – 200	170 – 200	32.000	25.000
170 – 230	170 – 230	64.000	41.000

## Options

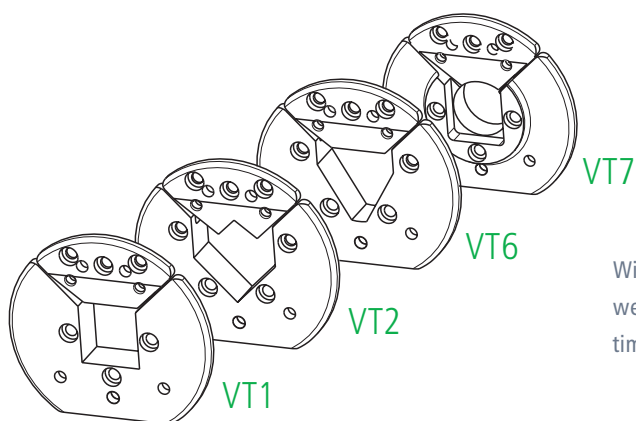
Single disk brake



Double disk brake



## VT-inserts



With the development of exchangeable VT-inserts we have successfully minimised the plant stoppage times.



#### Squared shafts

Specially developed expansion shafts for clamping square cores with expansion ledges. So far as possible standard parts are utilised for replaceability.



#### Carrier shafts

Vorwald manufactures customised round or square profile carrier shafts for taking up pneumatic expanding couplings.



#### Customised surfaces

All normal surface refinement processes can be carried out, such as hard chrome plating, chromating, nickel plating, anodising, hard coating, etc.



#### Customised shaft ends

All customised shaft journals can be manufactured by Vorwald, as well as complete shafts with pressed-on bearing units, etc.



#### Winding shafts with rotary union

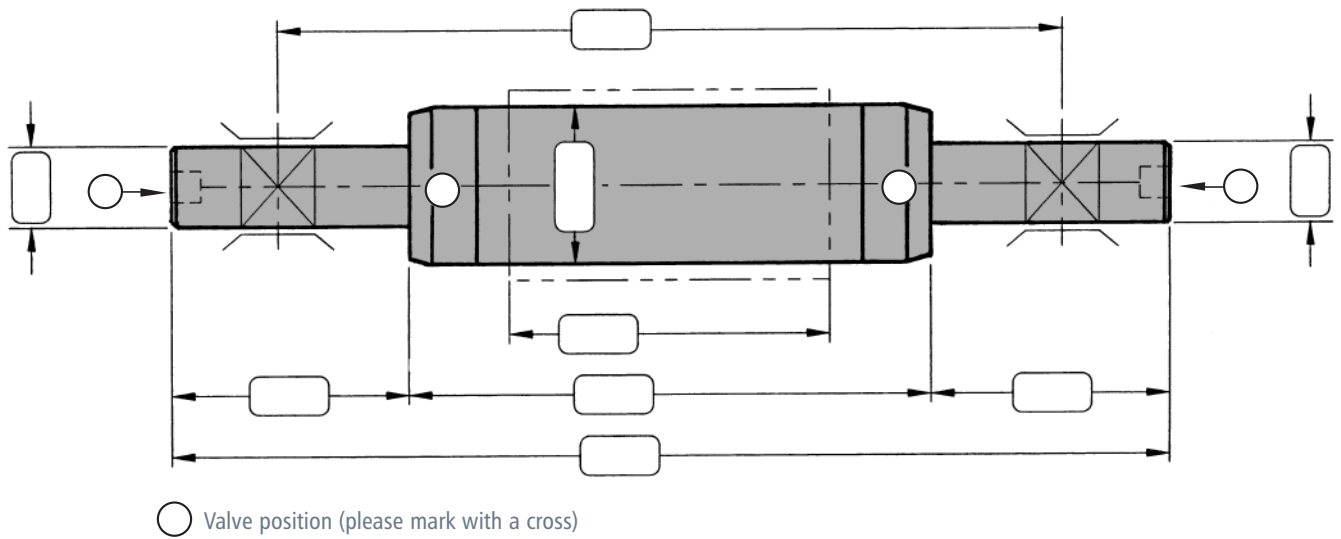
The optimal combination for ensuring high functional dependability by constant axial air supply.



#### Cantilivered shafts with flange bearing unit FL

Cantilivered expansion shafts make a high degree of automation possible, in particular when the air inflation and deflation is implemented with a rotary union and 3/2-way valve. Also available with brake and web tension regulation.





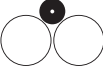




## Core information

Core internal diameter  ±   
Core external diameter   
Core material

## Winding method

- ☐  Single shaft winder
- ☐  Double shaft winder
- ☐  Winder with horizontal shaft and backing roller
- ☐  Carrier roll winder
- ☐  Double carrier roll winder
- ☐ Unwind unit ☐ Centre drive unit  
☐ Rewind unit ☐ Circumferential drive unit

## Technical requirements

Material   
Web speed (max.)  m/min  
Web tension (max.)  N;(N/cm)  
Working width (max.)  mm  
Working width (min.)  mm  
Slit width (max.)  mm  
Slit width (min.)  mm  
Reel diameter  mm  
Reel weight (max.)  kg  
Reel weight (min.)  kg  
Concentric expansion ☐ yes ☐ no  
Journal hardened ☐ yes ☐ no

## Comments

## Representations in

Austria  
Czech Republic  
Denmark  
Finland  
France

Germany  
Great Britain  
Greece  
Hungary  
Iran

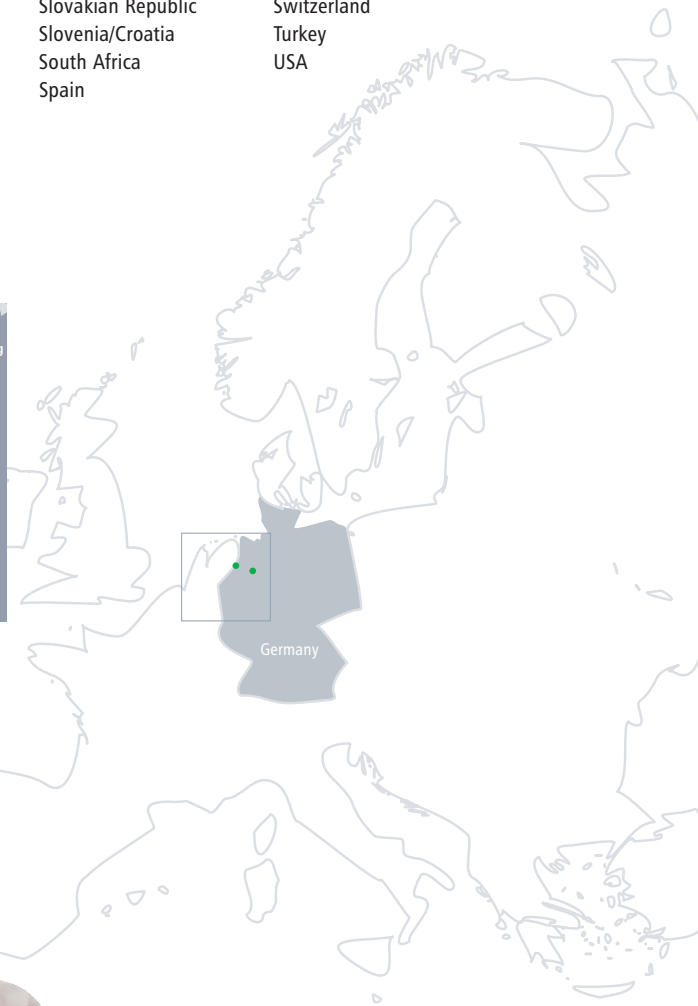
Israel  
Macedonia  
Netherlands  
Norway  
Poland

Portugal  
Slovakian Republic  
Slovenia/Croatia  
South Africa  
Spain

Sweden  
Switzerland  
Turkey  
USA



Production plant in Neuenhaus



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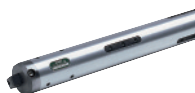


Shaft handling

# Mechanical expansion shafts







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Shaft handling

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# Mechanical expansion shaft

## Series 416

with individual expansion lugs

The Vorwald expansion shafts of the Series 416 are the standard models with individual expansion lugs that may be used in all applications. The simple construction ensures long service life.

Two expansion lug types are available in order to cover all requirements: Lengthwise grooved expansion lugs made of steel and expansion lugs with smooth surface made of polyurethane. The number and positioning of the expansion lugs in the shaft body are determined by the customer specifications. The lengthwise grooved and hardened surface of the steel lugs permits greatest possible torque transmission with cardboard cores. The smooth surface of the polyurethane lugs permits this force transmission with steel and plastic cores.

All expansion lugs are equipped with a leg spring to ensure slide-back into the shaft body. This makes simple push-on and push-off of the material cores possible.

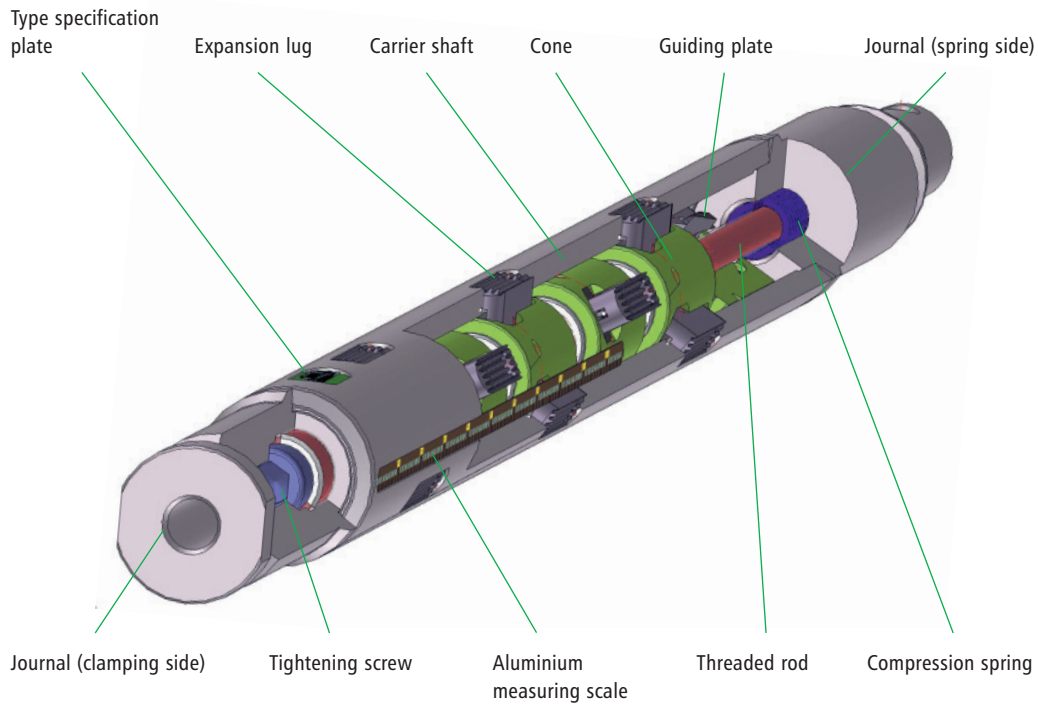
Expansion shafts with expansion lugs are available for cores with internal diameters in the range from 50 to 500 mm.

The functional principle is based on the inclined plane. By actuating the tightening screw the cone is pushed via a threaded rod under the expansion lugs like a wedge. The cone and the expansion lug have the same bevel, so that a radial movement is produced from an axial movement. By this means the expansion shaft acquires a very large clamping force. A further very important advantage of this method is the absolutely concentric clamping of the cores, since all expansion lugs expand to the same extent. This makes very high winding speeds possible. The shaft bodies can be made of numerous materials with numerous wall thicknesses – depending on the application by the customer.

Based on the Vorwald standard, the expansion shafts are customised according to the modular design principle. The clamping mechanism can be actuated in various ways by various means: e.g. with an internal clamping screw, an external clamping nut or a radial clamping screw.



## Sectional drawing of an expansion shaft, Series 416



### Options

- Expansion screw mounted axially in the journal
- Radial expansion nut / expansion screw
- Also available as cantilevered version with bearing on only one side
- Special dimensions are possible on inquiry

### Advantages

- + Very high weight bearing capability for heavy reels
- + Absolutely concentric clamping, thus very high web speeds possible
- + High torque transmission
- + Simple handling
- + Very little maintenance required

Available shaft diameters  
from 50 to 500 mm



# Mechanical expansion shaft

## Series 401

with individual expansion lugs

The Vorwald expansion shafts of the Series 401 are the standard range of models with individual expansion lugs that may be used in nearly all winding processes. The simple construction ensures long service life.

Two types of expansion lugs are available to cover all requirements: Lengthwise grooved expansion lugs made of steel and expansion lugs with smooth surface made of polyurethane. The number and positioning of the expansion lugs in the shaft body are determined by the customer requirements.

The lengthwise grooved and hardened surface of the steel lugs permits greatest possible torque transmission with paper cores. The smooth surface of the polyurethane lugs makes this force transmission possible with steel and plastic cores. All expansion lugs are equipped with a leg spring ensuring slide-back into the shaft body. This makes simple push-on and push-off of the material cores possible. Expansion shafts with expansion lugs are available for cores with an inside diameter in the range from 50 to 500 mm.

The functional principle is based on the inclined plane. By feeding compressed air into the pneumatic chamber the cone is pushed via a threaded rod under the clamping lug like a wedge. The cone and the expansion lug have the same bevel. This produces a radial movement from an axial movement. By this means the expansion shaft acquires a very large clamping force.

A very important further advantage of this method is the absolutely concentric clamping of the cores, since all expansion lugs expand to the same extent. This makes very high winding speeds achievable. The shaft bodies are made of numerous materials with numerous wall thicknesses – depending on the application by the customer.

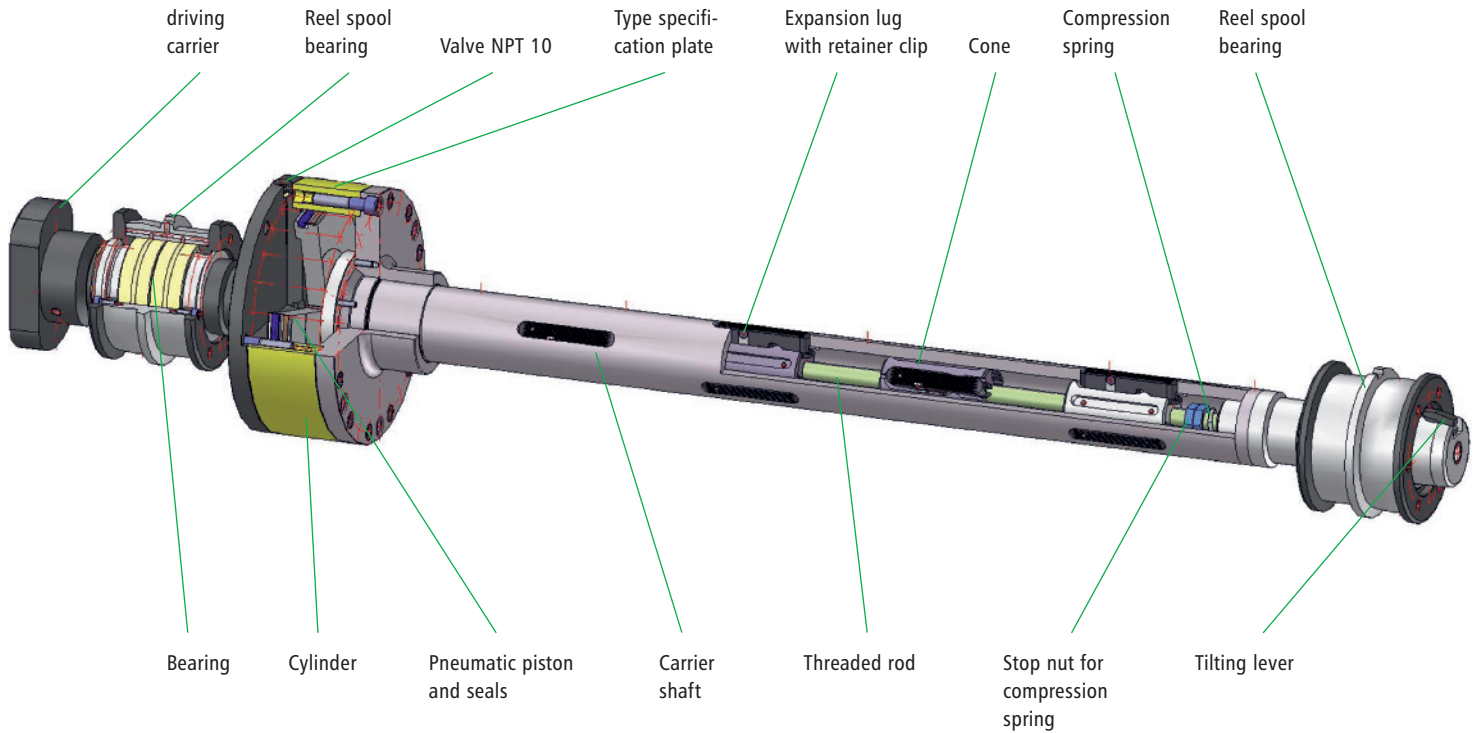
Based on the Vorwald standard, the expansion shafts are customised according to the modular design principle. The clamping mechanism is actuated via a pneumatic piston that can optionally be equipped with a hydraulic booster for further increasing the clamping force.





## Sectional drawing of an expansion shaft, Series 401

Example of a 3" expansion shaft



### Options

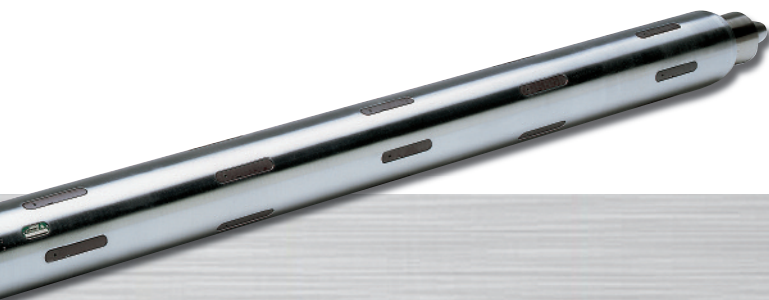
- inflation axially, radially or as combination
- With and without hydraulic booster
- Also available as cantilevered version
- Special dimensions are possible on inquiry

### Advantages

- + Very high weight bearing capability for heavy reels
- + Absolutely concentric clamping, thus very high web speeds possible
- + Very large torque transmission
- + Journal version on customer request
- + Simple handling
- + Very little maintenance required

Available shaft diameters

in the range from 50 to 500 mm



# Mechanical expansion shaft

## Series 745

with continuous expansion leaves

The Vorwald expansion shafts of the Series 745 are mechanical expansion shafts with continuous expansion leaves that are suitable for very narrow or thin-walled cores. The simple construction ensures a long service life. The surface of the outer leaf is available in lengthwise grooved or in polyurethane coated versions. The lengthwise grooved surface of the aluminium or steel leaves permits greatest possible torque transmission with paper cores. The smooth surface of the polyurethane leaves makes this force transmission possible with steel and plastic cores. All expansion leaves are bolted to expansion lugs underneath them. These expansion lugs in turn are equipped with a leg spring ensuring reliable contraction of the leaves. This makes simple push-on and push-off of the material cores possible. Further assistance is provided by the push-on and push-off ledges bolted onto the carrier tube.

Expansion shafts with expansion leaves are available for cores with an internal diameter in the range from 68 to 600 mm.

The functional principle is based on the inclined plane. By feeding compressed air into the pneumatic chamber the cone is pushed via a threaded rod under the expansion lug like a wedge. The cone and the expansion lug have the same bevel. This produces a radial movement from an axial movement.

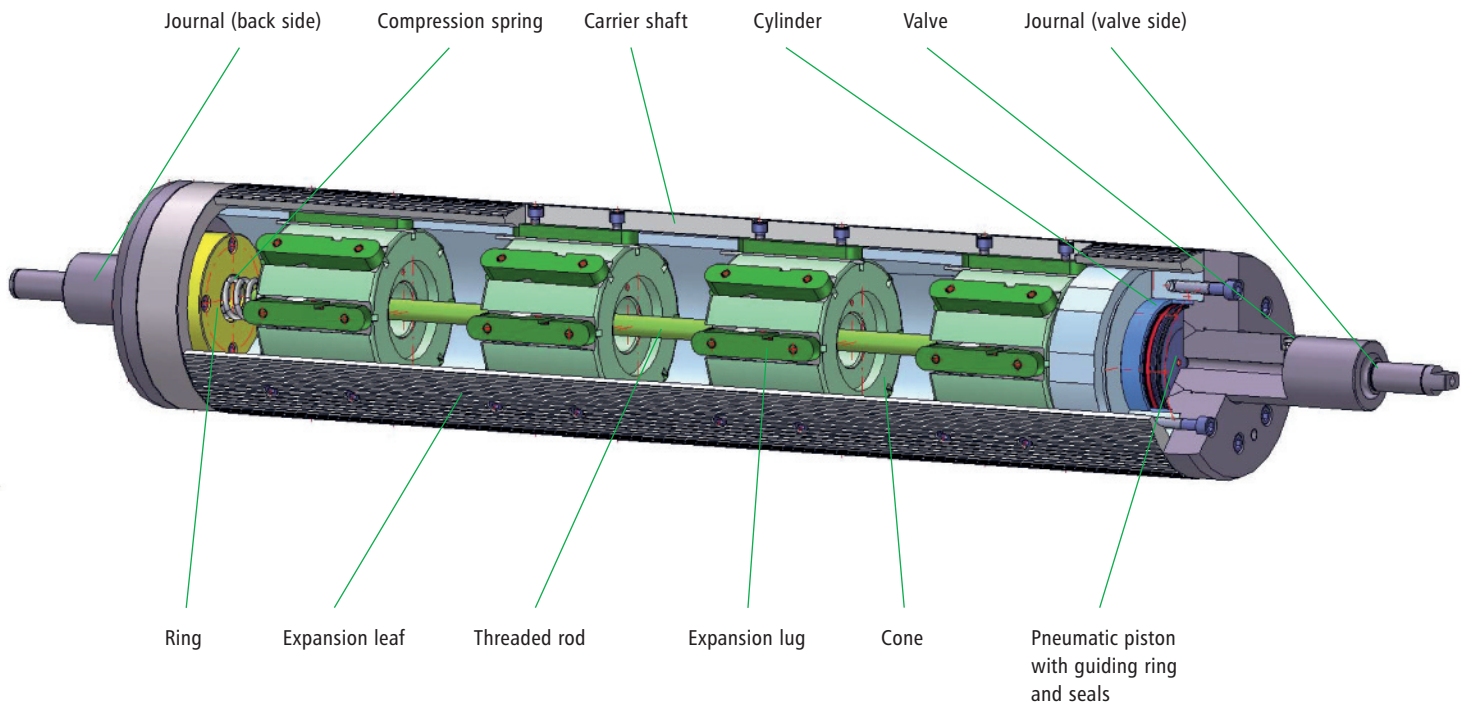
By this means the expansion shaft acquires a very large clamping force. A further very important advantage of this method is the absolutely concentric clamping of the cores, since all expansion leaves expand to the same extent. This makes very high winding speeds achievable.

The shaft bodies are made of numerous materials with numerous wall thicknesses – depending on the application by the customer. Based on the Vorwald standard, the expansion shafts are customised according to the modular design principle.

The clamping mechanism is actuated by a pneumatic piston that can be optionally equipped with a hydraulic booster for further increase of the clamping force.



## Sectional drawing of an expansion shaft, Series 745



### Options

- Compressed air inflation axially, radially or as combination
- Expansion leaf available made of steel, aluminium and with PU-coated surface
- With and without hydraulic booster
- Also available as cantilevered version
- Special dimensions are possible on inquiry

### Advantages

- + Very high weight bearing capability for heavy reels
- + Absolutely concentric clamping, thus very high web speeds possible
- + Very high torque transmission
- + Journal design according to customer specification
- + Simple handling
- + Very little maintenance required

Available shaft diameters  
in the range from 68 to 600 mm



# Mechanical expansion shaft Series 410 Multicore®

with continuous expansion and centering ledges

The multicore expansion shaft is suitable for safe take-up of many narrow individual cores without being confined to fixed subdivision patterns. At the same time it achieves maximum possible moments of inertia, thus minimised bending values.

The centering ledges expand purely mechanically to centre and round the cores optimally on the expansion shaft. Even with increased loads the ledges remain "fixed" in position by virtue of the self-blocking mechanics, thus ensuring steady running and good reel build-up.

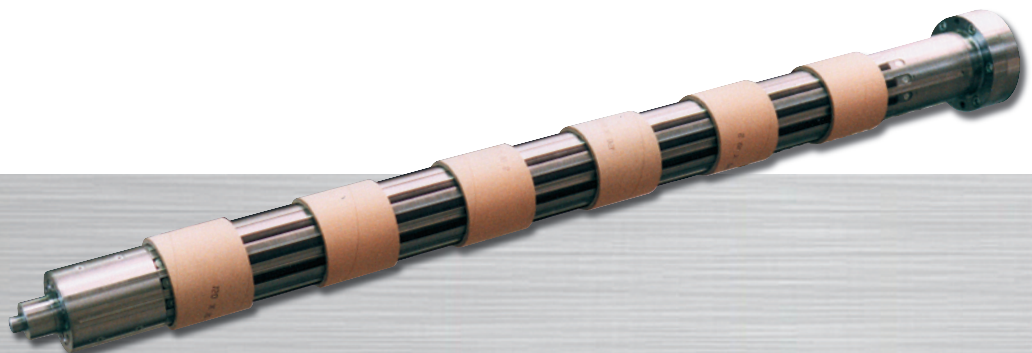
The expansion ledges expand purely pneumatically and thus ensure dependable torque transmission to every core. Expansion shafts with expansion ledges are available for cores with an internal diameter in the range from 150 to 600 mm.

By feeding compressed air into the pneumatic chamber the pneumatic piston is moved axially in the cylinder and displaces the internal cone driving rod.

The uniform centering ledge expansion resulting therefrom ensures concentric clamping of the cores. When compressed air is fed into the cylinder chamber, the expansion ledges on the circumference of the shaft expand.

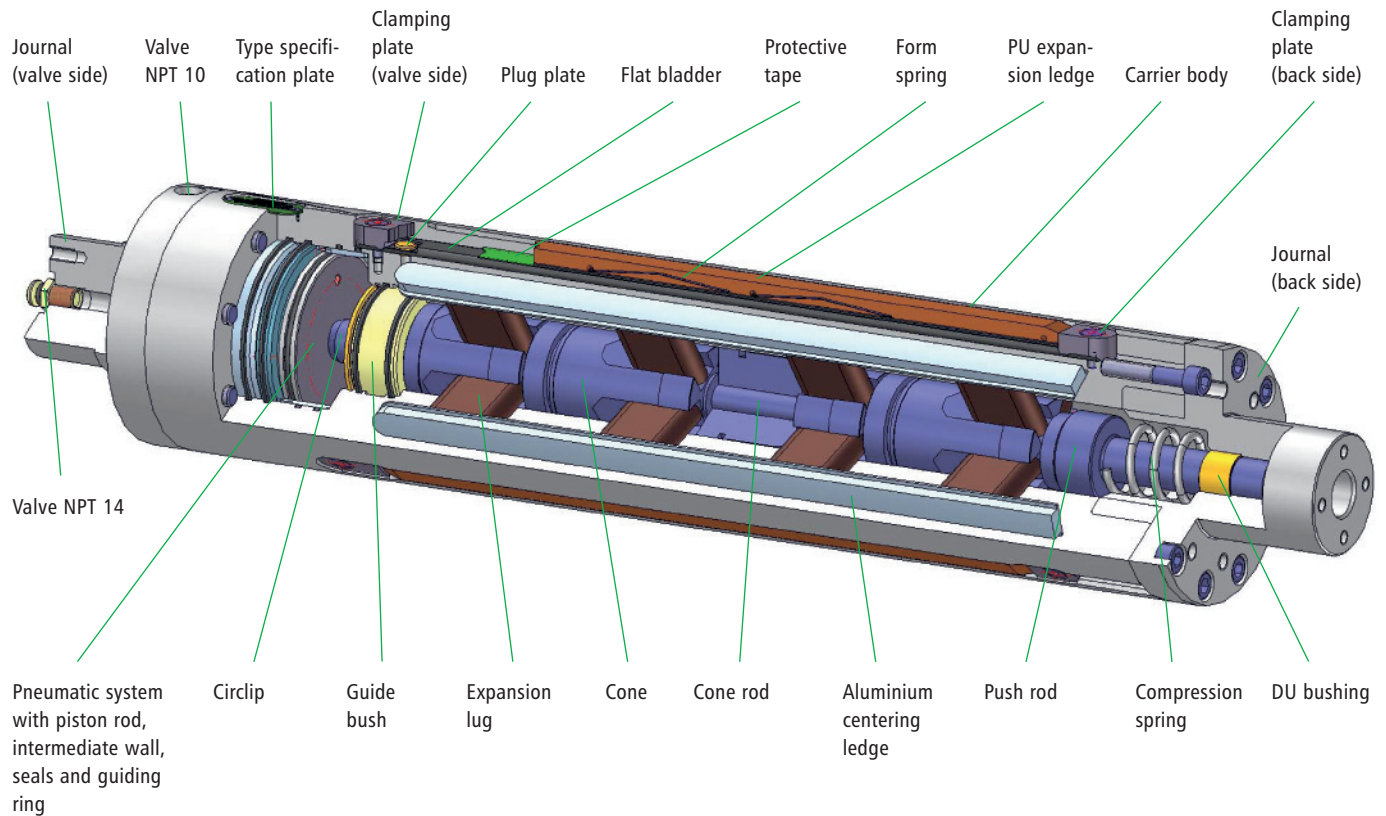
The expansion takes place with time delay produced by the flat bladders under the expansion ledges. These flat bladders ensure uniform torque transmission into every core, however narrow it may be.

After termination of the working procedure, the expansion and centering ledges are retracted to their initial position either by internal springs or by pressure application to the piston back side, so that the shaft can be taken out of the core.





## Sectional drawing of an expansion shaft, Series 410



### Features and advantages

- Concentric clamping of even the narrowest cores by proven mechanical Vorwald expansion system, thus ensures steady running of the reels, even with heavy reels and high web speeds
- Transmission of highest torques by pneumatic expansion ledges
- Special dimensions possible on inquiry
- Simple pneumatic actuation of the expansion mechanism
- Quick expansion and release, because only small amounts of air are required
- High true running accuracy
- Minimised bending by maximised moments of inertia
- Very little maintenance required

Available shaft diameters  
in the range from 148 to 600 mm



#### Squared shafts

Specially developed expansion shafts for clamping square cores with expansion ledges. Standardised components are utilised as far as possible for replaceability.



#### Carrier shafts

Vorwald manufactures round or square carrier shafts according to customer specifications, for taking up pneumatically expanding couplings.



#### Customised surfaces

All customary surface finish procedures can be carried out, such as hard chrome plating, chromating, nickel plating, anodising, hard coating, etc.



#### Customised shaft ends

All customised shaft journals can be produced by Vorwald, also as complete shafts with pressed-on bearing units, etc.



#### Winding shafts with rotary union

The optimal combination for ensuring high functional dependability by axial constant air feeding.



FL 2

#### Cantilivered shafts with flange bearing unit FL

Cantilivered expansion shafts make a high degree of automation possible, in particular when the air inflation and release is implemented with a rotary union and 3/2-way valve. Also available with brake and web tension control.





## Representations in

Austria  
Czech Republic  
Denmark  
Finland  
France

Germany  
Great Britain  
Greece  
Hungary  
Iran

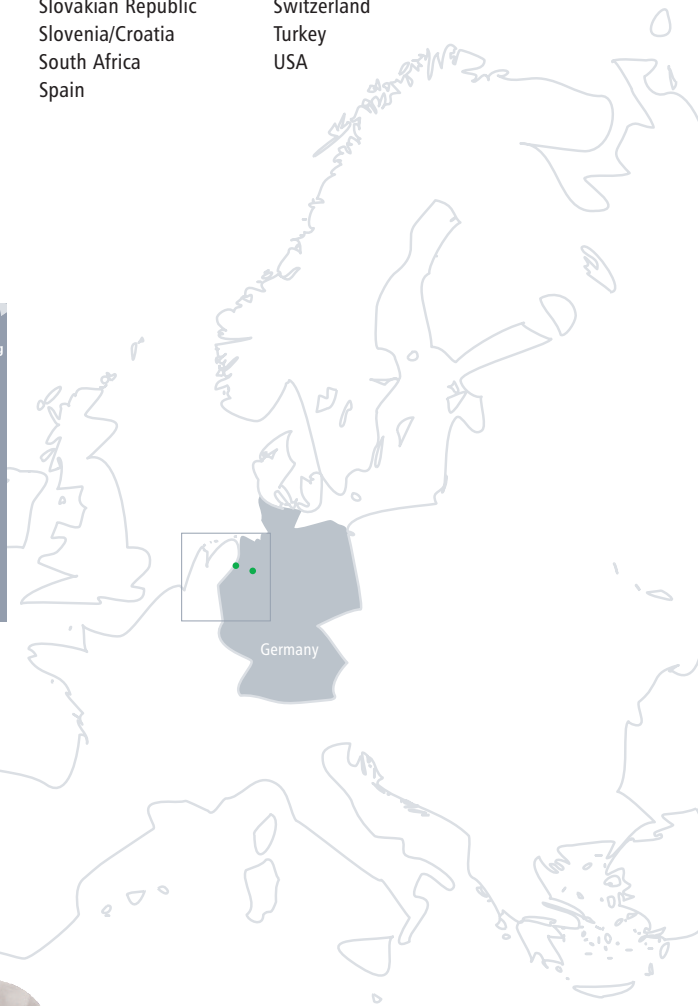
Israel  
Macedonia  
Netherlands  
Norway  
Poland

Portugal  
Slovakian Republic  
Slovenia/Croatia  
South Africa  
Spain

Sweden  
Switzerland  
Turkey  
USA



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Pneumatic  
expansion shafts



Mechanical  
expansion shafts



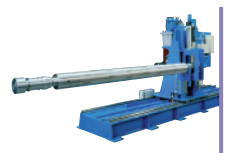
Expansion couplings



Expansion chucks  
and adapters



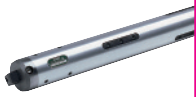
Friction and  
knife shafts



Shaft handling

# Expansion couplings





Pneumatic  
expansion shafts



Mechanical  
expansion shafts



Expansion couplings



Expansion chucks  
and adapters



Friction and  
knife shafts



Shaft handling



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# We want you to be successful

The expansion units presented in this catalogue originate from the Vorwald Classic Programme and the winding technology products developed and marketed by Deublin USA and Germany. By virtue of their specific features these products have acquired a large market share in the field of rewinding and unwinding systems in the paper and film processing industry ranging from the smallest to the largest installations. The sheer breadth of products within the Neuenhauser-Vorwald range means that all areas of winding technology are now covered. Each product reflects the quality and experience of the manufacturing company behind it. Neuenhauser-Vorwald manufactures these products in European factories that are equipped with ultra-modern facilities and have been **certified according to DIN ISO 9001**. Our product quality and depth of experience ensures for all our customers economic utilisation of our expansion units.



# Pneumatic expansion coupling Series SPA

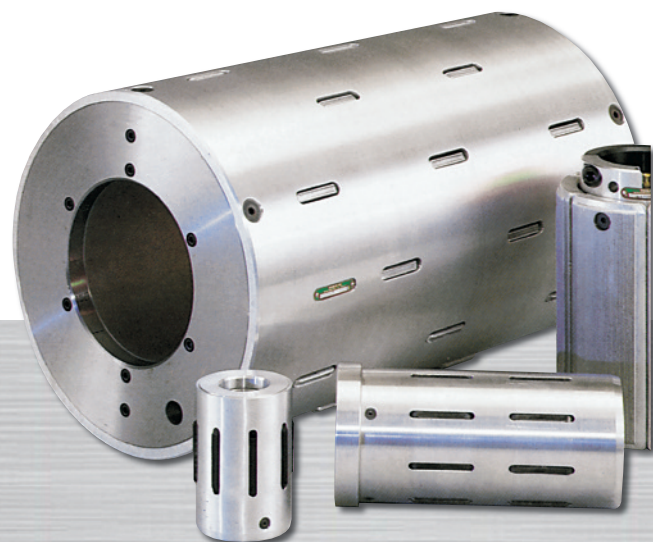
with individual expansion ledges

Vorwald expansion couplings with expansion ledges are based on the proven construction of the Series A expansion shaft. The expansion ledges are free moving. A hard-wearing, seamless bladder is seated in each expansion coupling, giving long service life even under the most difficult operating conditions. The internal bladder is designed for a permanent load of 6 bar.

The Vorwald expansion couplings are an economical alternative for the conventional mechanical constructions utilised for printing labels. The expansion coupling can be utilised in both winding directions and permits secure clamping both with regard to safe torque transmission as well as securing against axial displacement.

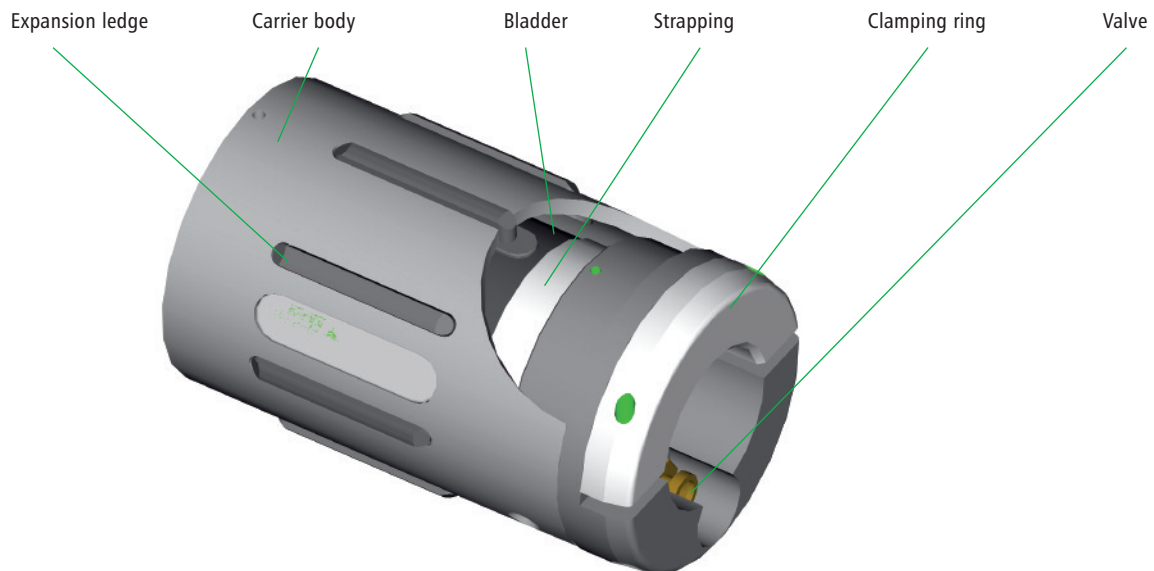
The coupling body is made of aluminium and is easy to handle, even with larger diameters, by virtue of its simple construction. The expansion ledges are in compartments and can expand/impand without any problems, by virtue of their freedom of movement.

The construction permits larger internal diameters than comparable designs, so that the couplings can be mounted on larger rods or winding shafts. The standard version is attached with a clamping ring. Flange versions are available too.





## Sectional drawing of an expansion coupling, Series SPA



### Expansion coupling, version A with polyurethane expansion ledges

Order number	Core internal Ø, mm	A: max. internal Ø, mm	max. squared size, mm	B: exp. ledges non-expanded, mm	C: exp. ledges expanded, mm	Number of expansion ledges	D: expansion ledge length, mm	E: total length, mm	Weight approx. kg	Material carrier body	Transferable torque [Nm]
SPA 61634	3" ≈ 76,2	38	-	74,6	79	8	50	127	1,0	Alu	40
SPA 61633	3" ≈ 76,2	40	-	74,6	79	8	50	127	1,0	Alu	40
SPA 61635	3" ≈ 76,2	-	30	74,6	79	8	50	127	1,0	Alu	40
SPA 61644	6" ≈ 152,4	75,2	-	150,5	157	12	50	160	2,5	Alu	80
SPA 61645	150	75,2	-	148,5	155	12	50	160	2,5	Alu	80

### Options

- Surface protection (nickel plating, anodising, chrome plating, and many more)
- Version suitable for the foodstuffs industry
- Various materials of the expansion ledges available
- Flange version
- Special dimensions are available on inquiry

### Advantages

- + Very quick conversion to other core diameters
- + Small weight of the coupling
- + Simple handling
- + Take-up bore according to customer specification

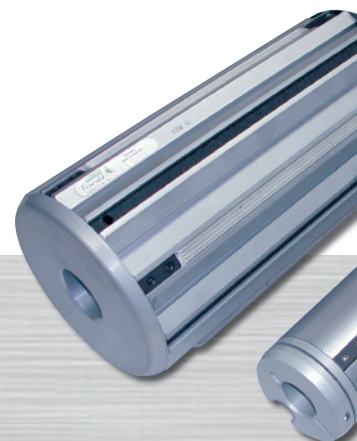
The standard sizes are 70, 76, 100, 150 and 152 mm

# Pneumatic expansion coupling Series SMB

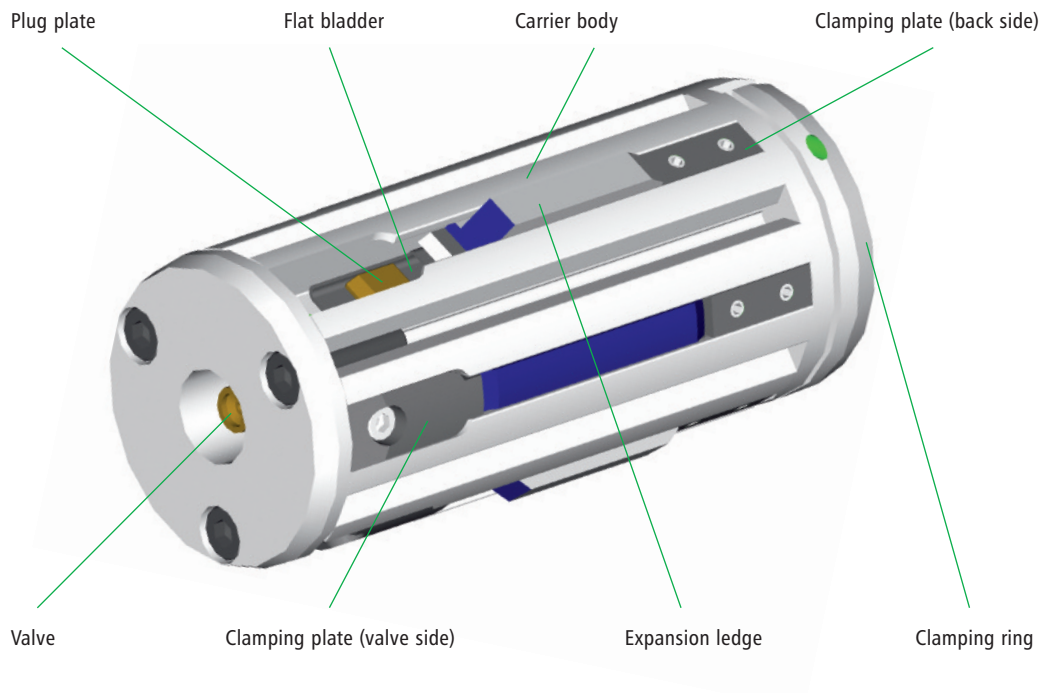
with continuous expansion ledges

Vorwald expansion couplings of the Series SMB are based on the proven construction of the MB shafts. The couplings can be pushed onto the carrier shaft or flange-connected directly on a bearing flange. One or several very narrow cores can be clamped on the coupling over the entire width. Special diameters up to 300 mm are available in addition to the standard diameters of 75 mm (3 inches) and 150 mm (6 inches). The length can be adapted to customer specification. In contrast to our other coupling systems, longer lengths are economically possible too.

An expansion bladder rated for up to 6 bar loading is seated under each expansion ledge and can be replaced from outside when necessary. There is no risk of bladder bursting even when clamping without core or when only partly loaded with cores. The expansion couplings are mounted on the carrier shaft with a split clamping ring or with securing screws.



## Sectional drawing of an expansion coupling, Series SMB



### Options

- Surface protection (nickel plating, anodising, chrome plating, and many others)
- Version suitable for the foodstuffs industry
- Expansion ledges made of polyurethane, aluminium or plastic
- Quasi-centring pneumatically or mechanically
- Free positioning of a core stop
- Special dimensions are available on inquiry

### Advantages

- + Very quick conversion to other core diameters
- + Small weight of the coupling
- + Simple handling
- + Eminently suitable for narrow webs
- + Conceived for „light“ applications
- + Take-up bore to customer specifications
- + „Soft clamping“, i.e. no deformation of the core

The standard sizes are 76, 150 and 152 mm

# Pneumatic expansion coupling Series 609

with continuous expansion ledges

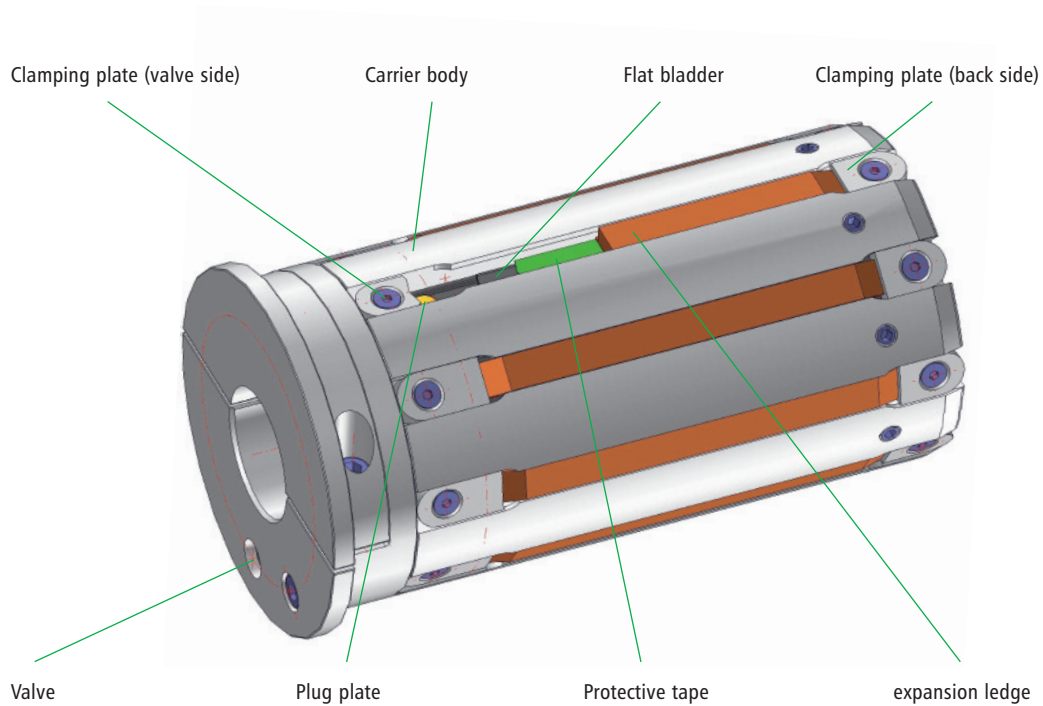
Vorwald expansion couplings of the Series 609 are based on the proven construction of the expansion shafts of the Series 409 and constitute an unusually light and robust constructional design. These couplings can be pushed onto a carrier shaft or flange-connected on a bearing flange directly on the bearing shaft. One or several very narrow reels can be clamped on the coupling over the entire width. Special diameters up to 300 mm are available in addition to the standard diameters of 75 mm (3 inches) and 150 mm (6 inches). The length can be adapted to customer specification. In contrast to our other coupling types, longer lengths are economically possible too. The expansion couplings are attached on the carrier shaft with a split clamping ring.

This expansion coupling is particularly suitable for heavy reels, because the flat bladders can be loaded with up to 6 bar pneumatic pressure. This makes it possible to transmit a very large torque. When clamping without core there is no risk of bladder bursting because the expansion ledges are guided in a T-groove and thus undesired expansion of the bladder is prevented. The expansion bladder can be quickly replaced from outside when necessary by releasing the clamping plate.





## Sectional drawing of an expansion coupling, Series 609



### Options

- Surface protection (nickel plating, anodising, chrome plating, and many others)
- Version suitable for the foodstuffs industry
- Expansion ledges made of polyurethane, aluminium or plastic
- Quasi-centring pneumatically or mechanically
- Free positioning of a core stop
- Special dimensions are available on inquiry

### Advantages

- + Very quick conversion to other core diameters
- + Simple handling
- + Eminently suitable for narrow webs
- + Conceived for „rough“ applications
- + Take-up bore according to customer specification

The standard sizes are 76, 150 and 152 mm.



# Pneumatic expansion coupling Series SPM/SPZ

with continuous expansion leafs made of aluminium

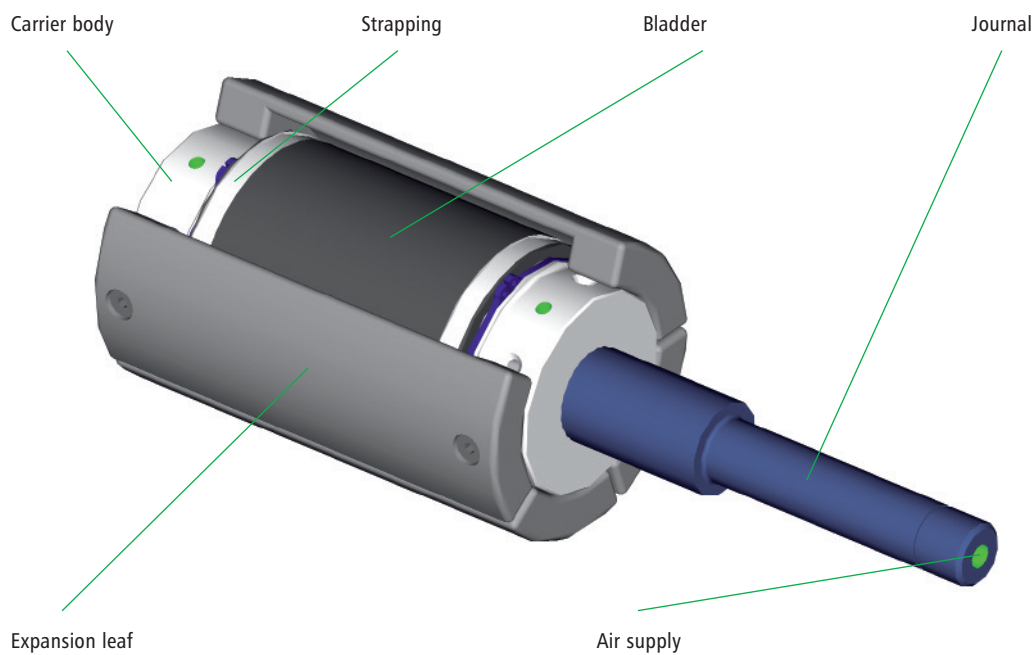
The Vorwald expansion couplings of the Series SPM/SPZ are based on the principle of the expansion shafts of the Series L. In contrast to conventional expansion couplings which clamp an inflatable expansion ring directly against the core, this type of coupling uses lengthwise grooved expansion leafs made of aluminium. The expansion leafs are expanded by an internally seated replaceable bladder. This arrangement avoids the damage and wear to the bladder which is experienced in other designs. The aluminium expansion leafs are also equipped with an expansion stop, so that this expansion coupling may be clamped with a pressure of up to 6 bar even without winding core, since the stop prevents the bladder bursting. The large contact area of the expansion leafs on the bladder produces a clamping force when activated with compressed air that holds the core securely in place, even in the case of quick starting and stopping.

Various take up diameters are available depending on the external diameter. A version with flange or bearing journal, the Series SPZ, is also possible.

The chief application field of this expansion coupling is for thin walled cores that are easily deformed and can become unusable with other expansion elements.



## Sectional drawing of an expansion coupling, Series SPM/SPZ



### Options

- Surface protection is possible
- Version suitable for the foodstuffs industry
- Free positioning of a core stop
- Flange version
- Special dimensions are available on inquiry

### Advantages

- + Very quick conversion to other core diameters
- + Small weight of the coupling
- + Simple handling
- + Eminently suitable for narrow webs and thin walled cores
- + Conceived for "light" applications
- + Take-up bore according to customer specifications

The standard sizes are 70, 76, 150 and 152 mm.



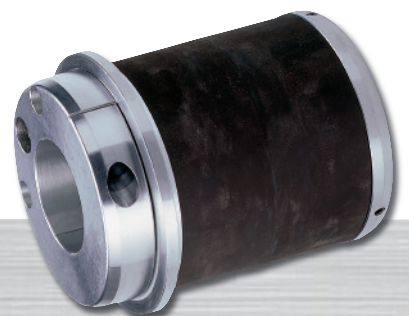
# Pneumatic expansion coupling Series 605

with expansion ring

The Vorwald expansion couplings of the Series 605 with an expansion ring made of polyurethane are an extremely light and robust design. They are suitable for cores made of cardboard, aluminium, plastic or steel with an internal diameter in the range from 150 to 152.4 mm. The expansion couplings of the Series 605 feature very low weight of the coupling and a very high torque transmission of 600 Nm/coupling. The expansion coupling is available with and without core stop collar. This has the advantage of consistent positioning of the core in the rewind or unwind station. Furthermore, several expansion couplings can be mounted on one carrier shaft and connected

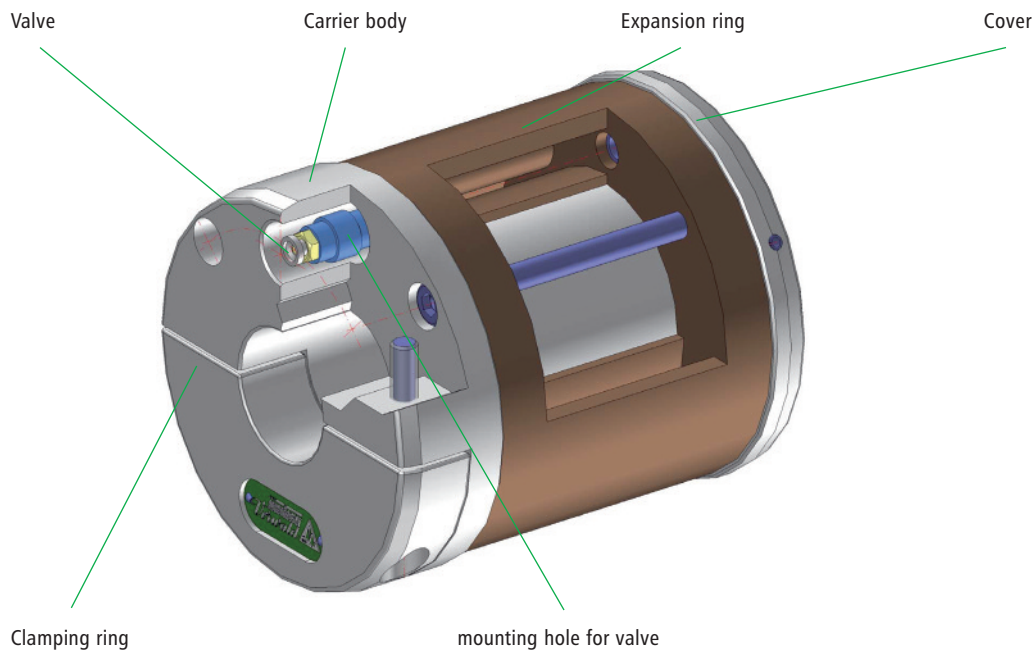
to each other with a spiral bladder for compressed air. The expansion couplings of the Series 605 should be filled with compressed air only once cores have been pushed on. Otherwise the expansion ring could be damaged.

The chief application field for this expansion coupling is where there are small variations in core internal diameters.





## Sectional drawing of an expansion coupling, Series 605



### Options

- Surface protection (nickel plating, anodising, chrome plating, and many others)
- Connection of several couplings with spiral bladder
- With and without core stop collar

### Advantages

- + Simple handling
- + High torque transmission of 600 Nm/coupling
- + Take-up bore according to customer specification

The standard sizes are 150 and 152 mm.



# Mechanical expansion coupling

## Series 260

with continuous aluminium leafs

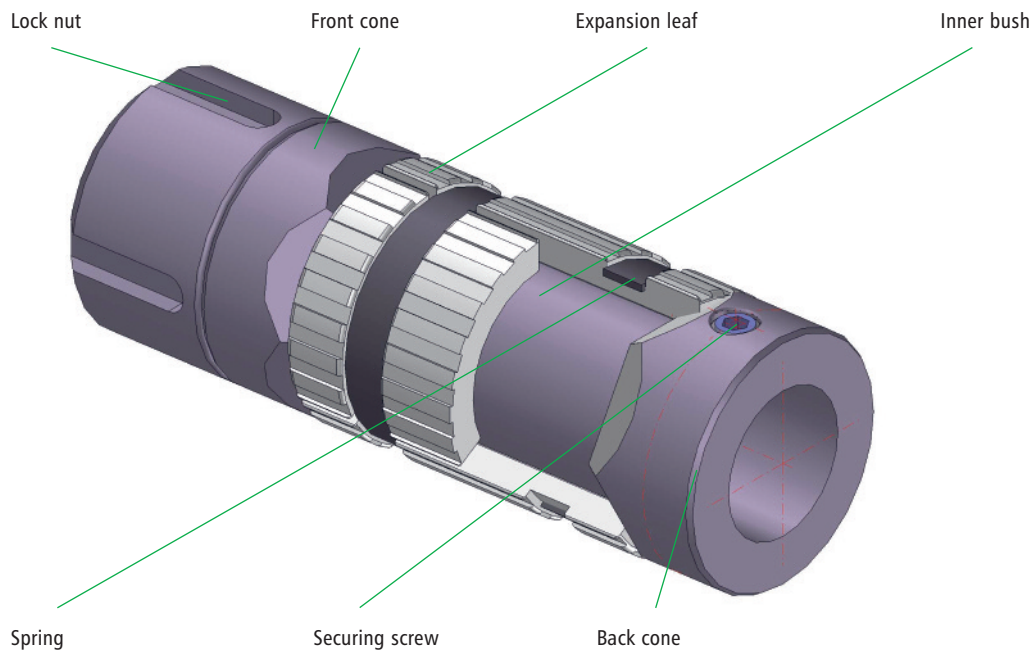
The Vorwald expansion couplings of the Series 260 with continuous aluminium expansion leafs are very robust. They are suitable for cores made of cardboard, aluminium, plastic and steel with the standard diameters of 70, 76.2, 100, 120, 150 and 152.4 mm. The expansion couplings of the Series 260 are based on the functional principle of the inclined plane, i.e. by actuation of a lock nut or hexagonal nut a cone is pushed under the expansion leafs, pressing them outwards. Depending on the tightening torque, the expansion coupling can transmit a greater or smaller torque.

A further advantage of this very simple clamping solution is the concentric clamping of the cores on the leafs, which permits higher winding speeds. When the clamping nut is released, spiral springs pull the leafs back to their original position.

The chief application field of this expansion coupling is where the demands are relatively low to medium and where costs have to be kept to a minimum.



## Sectional drawing of an expansion coupling, Series 260



### Options

- Surface protection (nickel plating, anodising, chrome plating, and many others)
- Various different bearings are possible
- Actuation by hook spanner or open ended spanner
- Special dimensions are available on inquiry

### Advantages

- + Very quick conversion to other core diameters
- + Simple handling
- + Concentric clamping
- + Take-up bore according to customer specification
- + No clamping force loss
- + Favourable price solution

The standard sizes are 70, 76.2, 100, 120, 150 and 152.4 mm.





## Representations in

Austria  
Czech Republic  
Denmark  
Finland  
France

Germany  
Great Britain  
Greece  
Hungary  
Iran

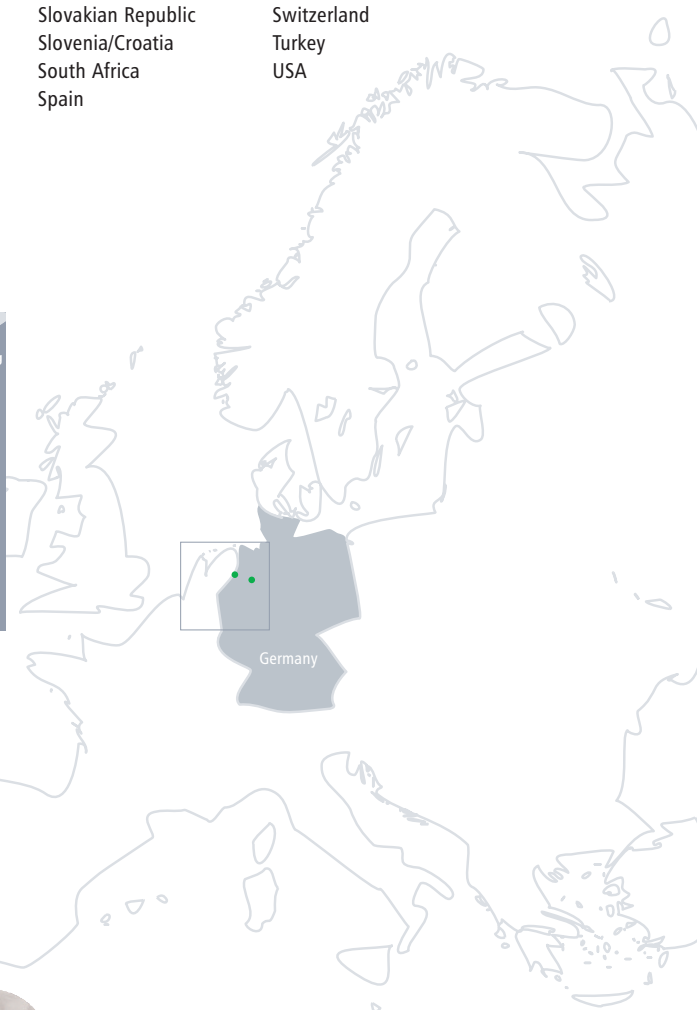
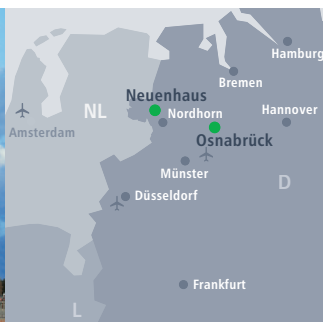
Israel  
Macedonia  
Netherlands  
Norway  
Poland

Portugal  
Slovakian Republic  
Slovenia/Croatia  
South Africa  
Spain

Sweden  
Switzerland  
Turkey  
USA



Production plant in Neuenhaus



### Neuenhauser Maschinenbau GmbH

#### Sales Department

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Telefax +49 (0) 59 41 / 604 - 206





Pneumatic  
expansion shafts



Mechanical  
expansion shafts



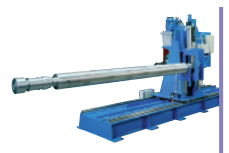
Expansion couplings



Expansion chucks  
and adapters



Friction and  
knife shafts



Shaft handling

# Expansion chucks and adapters





Pneumatic  
expansion shafts



Mechanical  
expansion shafts



Expansion couplings



Expansion chucks  
and adapters



Friction and  
knife shafts



Shaft handling



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# We want you to be successful

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# Mechanical expansion chuck

## Series 831

with individual expansion lugs

The Vorwald expansion chucks of the Series 831 are suitable for rewinding and unwinding machines in which the required clamping force is applied by axial displacement of the expansion chuck support. In this process the core presses against the core stop collar of the expansion chuck and makes the expansion lugs expand centrally. The fixed centering nose prevents premature expansion of the expansion chuck.

Two types of expansion lugs are available to cover all requirements: Lengthwise grooved expansion lugs made of steel and expansion lugs with smooth surface made of polyurethane. The number and positioning of the expansion lugs in the so called mantle are determined by the customer requirements.

The lengthwise grooved and hardened surface of the steel expansion lugs permits the greatest possible torque transmission with cardboard cores. The smooth surface of the polyurethane expansion lugs permits this force transmission with steel, aluminium and plastic cores. All expansion lugs are equipped with a leg spring to ensure slide back into the mantle. This makes push-on and push-off of the

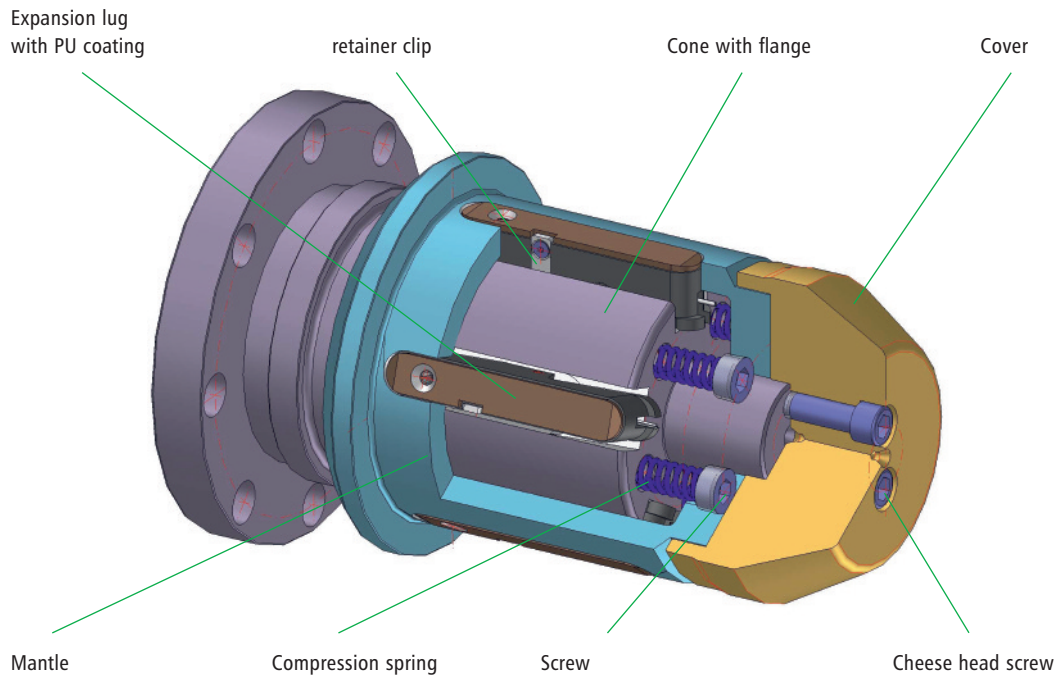
material cores easy. Expansion chucks with expansion lugs are available for cores with internal diameter in the range from 50 to 500 mm.

The functional principle is based on the inclined plane. The axial force pulls the expansion lugs outwards on the cone like on a wedge. The cone and the expansion lugs have the same bevel. This produces a radial movement from an axial movement. This arrangement provides the expansion chuck with a very large clamping force. A further very important advantage of this arrangement is the absolutely concentric clamping of the cores, because all expansion lugs expand uniformly to the same extent. This makes very high winding speeds achievable.

The mantles can be made of numerous materials with numerous different wall thicknesses, depending on the application intended by the customer. Based on the Vorwald standard, the expansion chucks are customised according to the modular design principle.



## Sectional drawing of an expansion chuck, Series 831



### Options

- Various different expansion lug surfaces to match the respective core material
- Flange or bearing shaft according to customer specification
- Quick adaptation to various core diameters with adapters; see Section 4.3
- Special dimensions are possible on inquiry

### Advantages

- + High torque transmission
- + True running tolerance  $\pm 0.1$  mm
- + Quick clamping and unclamping
- + No additional medium such as compressed air required for expanding

Available expansion chuck diameters ranging from 50 to 500 mm



# Mechanical expansion chuck Series 841

with individual expansion lugs

The Vorwald expansion chucks of the Series 841 are suitable for shaftless rewinding and unwinding machines operating with medium torque values. The expansion of the expansion lugs takes place centrally.

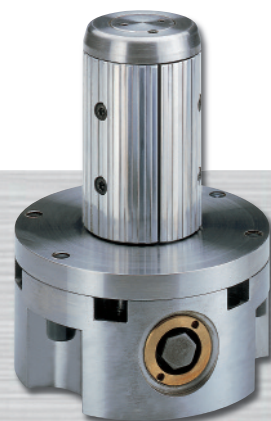
Two different types of expansion lugs are available in order to cover all requirements: Lengthwise grooved expansion lugs made of steel and expansion lugs with smooth surface made of polyurethane. The number and positioning of the expansion lugs in the so called mantle are determined by the customer specifications. Alternatively expansion leafs made of aluminium or steel with and without surface refinement are available too.

The lengthwise grooved and hardened surface of the steel expansion lugs permits the greatest possible torque transmission with cardboard cores. The smooth surface of the polyurethane expansion lugs permits this force transmission with steel, aluminium and plastic cores. All expansion lugs are equipped with a leg spring to ensure slide back into the mantle. This makes push-on and push-off of the material

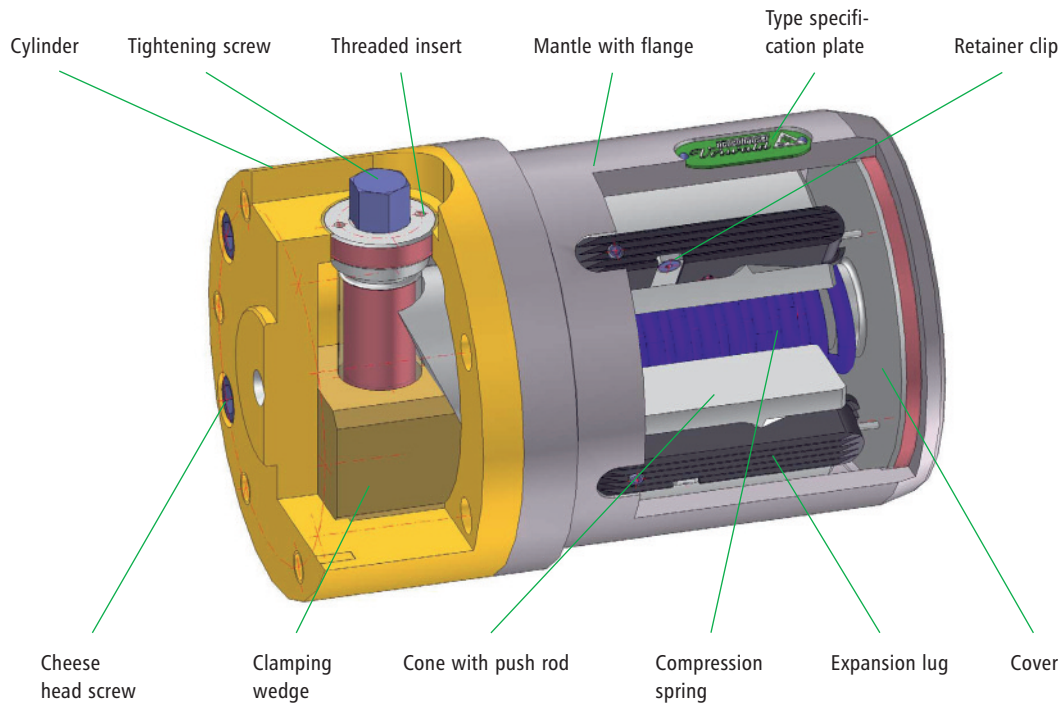
cores easy. Expansion chucks with expansion lugs or expansion leafs are available for cores with internal diameter in the range from 50 to 500 mm.

The functional principle is based on the inclined plane. Actuation of the radial tightening screw pushes the cone like a wedge under the expansion lugs, thus pressing them outwards. The cone and the expansion lugs have the same bevel. Thus a radial movement is produced from an axial movement. This arrangement provides the expansion chuck with a very large clamping force. A further very important advantage of this arrangement is the absolutely concentric clamping of the cores, because all expansion lugs expand uniformly to the same extent. This makes very high winding speeds achievable.

The mantles can be made of numerous different materials with numerous wall thicknesses, depending on the application envisaged by the customer. Based on the Vorwald standard, the expansion chucks are customised according to the modular design principle.



## Sectional drawing of an expansion chuck , Series 841



### Options

- Various different expansion lug surfaces to match the respective core material
- Flange or bearing shaft according to customer specification
- Quick adaptation to various core diameters with adapters; see Section 4.3
- Special dimensions are possible on inquiry

### Advantages

- + High torque transmission
- + True running tolerance  $\pm 0.1$  mm
- + Quick clamping and unclamping
- + No additional medium such as compressed air required for expanding

Available expansion chuck diameters ranging from 50 to 500 mm



# Mechanical expansion chuck Series 834 ROLLMATIC®

with individual expansion leaves

The Vorwald expansion chucks of the Series 834 are suitable for unwinders without shafts. The expansion of the expansion leaves takes place centrally.

The roughened and hardened surface of the steel leaves permits the greatest possible torque transmission with cardboard, steel and plastic cores.

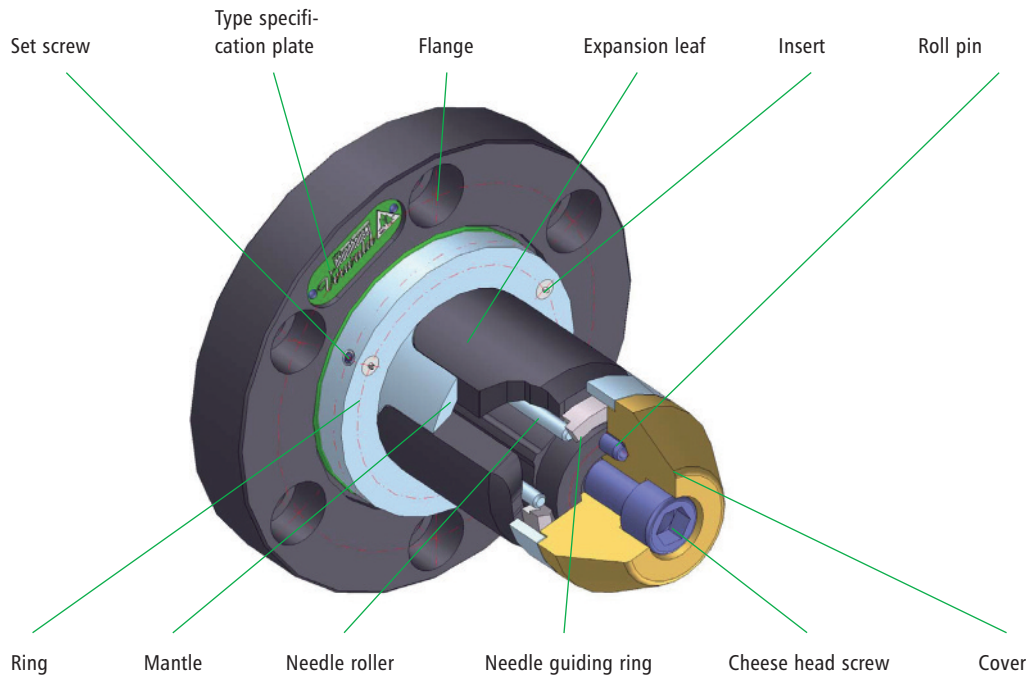
The functional principle is based on the inclined plane that lies in the winding direction. Through the existing web tension of the winding material a torque acts on the expansion chuck via the reel diameter. This torque makes cylindrical rollers inside the expansion chuck run up an inclined plane thereby pressing the expansion leaves outwards. An additional medium such as compressed air is not required for the activation.

The clamping force of the expansion chuck varies depending on the web height and the given braking torque of the unwinding machine. An important condition is that both expansion chucks must be braked and that a minimum torque of  $0.05 \times$  the reel weight acts on the expansion chucks. A further very important advantage of this arrangement is the absolutely concentric clamping of the cores, because all expansion leaves expand uniformly to the same extent. This makes very high winding speeds achievable.

Based on the Vorwald standard the expansion chucks are customised according to the modular design principle.



## Sectional drawing of an expansion chuck, Series 834



### Options

- Flange or bearing shaft according to customer specification
- Special dimensions are possible on inquiry

### Advantages

- + Transmission of highest torques
- + True running tolerance  $\pm 0.1$  mm
- + Quick clamping and unclamping
- + No additional medium such as compressed air required for expanding

Available expansion chuck diameters ranging from 68 to 500 mm



# Mechanical expansion chuck Series 860/861

with individual expansion lugs or expansion leafs

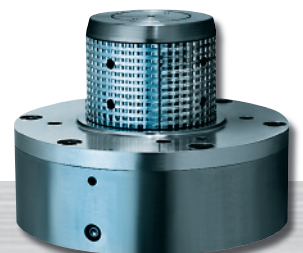
The Vorwald expansion chucks of the Series 860 are standard expansion chucks with individual expansion lugs, that may be used in almost all winding processes.

The simple construction ensures long service life. Several different types of expansion lugs are available for covering all requirements: Lengthwise grooved expansion lugs made of steel and expansion lugs with smooth surface made of polyurethane or screwed versions with various surface profiles that are quickly interchangeable. The number and positioning of the expansion lugs in the mantle are determined by the customer requirements.

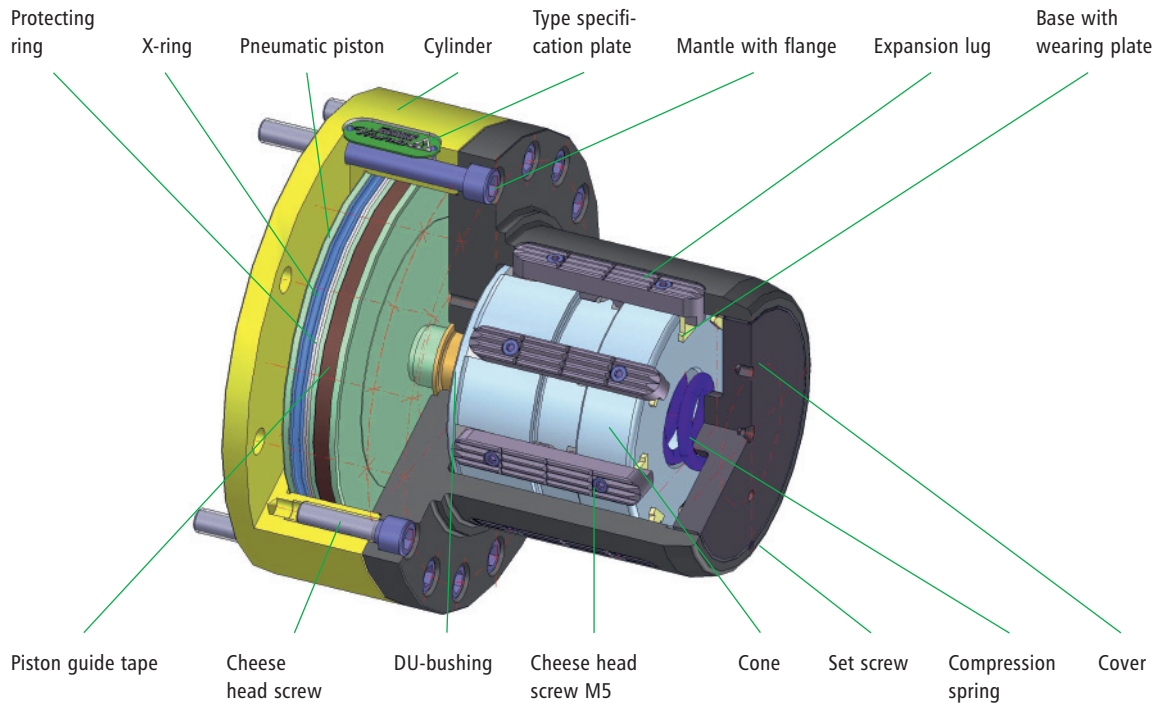
The numerous different surfaces of the hardened steel expansion lugs ensure greatest possible torque transmission into the various cores materials. All expansion lugs are equipped with a retracting system ensuring reliable contraction. This makes possible easy push-on and push-off of the cores. Expansion leafs are also available as alternative for the expansion lugs. Expansion chucks with expansion lugs or expansion leafs are available for cores with internal diameter in the range from 50 to 500 mm.

The functional principle is based on the inclined plane. By feeding compressed air into the pneumatic cylinder the pneumatic piston pushes the cone under the expansion lugs like a wedge. The cone and the expansion lugs have the same bevel. Thus a radial movement is produced from an axial movement. This arrangement provides the expansion chuck with a very large clamping force. The expansion chuck can be optionally equipped with a hydraulic booster (Series 861) that further increases the clamping force. A further very important advantage of this arrangement is the absolutely concentric clamping of the cores, because all expansion lugs expand uniformly to the same extent. This makes very fast winding speeds achievable.

The mantles of the expansion chucks can be made of numerous different materials with various wall thicknesses. Based on the Vorwald standard the expansion chucks are customised according to the modular design principle.



## Sectional drawing of an expansion chuck, Series 860



### Options

- Flange or bearing shaft according to customer specification
- Available with and without booster
- Expansion lugs or expansion leaves with various surfaces
- Quick adaptation to various core diameters with adapters; see Section 4.3
- Special dimensions are possible on inquiry

### Advantages

- + Transmission of highest torques
- + True running tolerance  $\pm 0.1$  mm
- + Absolutely centred clamping of the cores
- + Quick clamping and unclamping

Available expansion chuck diameters ranging from 50 to 500 mm



# Mechanical expansion chuck

## Series 811

with individual expansion lugs or expansion leafs

The Vorwald expansion chucks of the Series 811 are standard expansion chucks with individual expansion lugs, that can be utilised for almost all winding processes.

The very simple construction of the interface to the machine flange or to the existing cylinder permits quick change to other expansion chuck diameters.

Several different types of expansion lugs are available for covering all requirements: Lengthwise grooved expansion lugs made of steel and expansion lugs with smooth surface made of polyurethane or screwed versions with various surface profiles that are quickly interchangeable. The number and positions of the expansion lugs in the mantle are determined by the customer requirements.

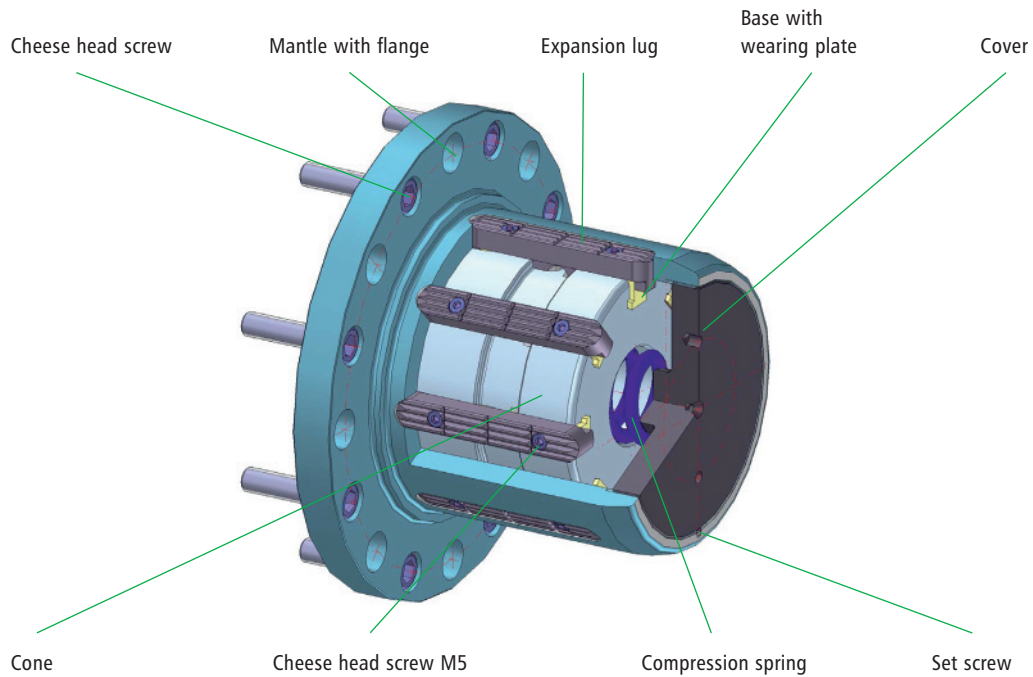
The numerous different surfaces of the hardened steel expansion lugs ensure the greatest possible torque transmission into the various core materials. All expansion lugs are equipped with a retraction system ensuring reliable contraction. This makes push-on and push-off of the cores easy. Expansion leafs are also available as alternative to the expansion lugs. Expansion chucks with expansion lugs or expansion leafs are available for cores with internal diameter ranging from 50 to 500 mm.

The functional principle is based on the inclined plane. The clamping mechanism can be activated by an integrated pneumatic cylinder or by an external component mounted in the machine. Thereby the cone is pushed like a wedge under the expansion lugs. The cone and the expansion lugs have the same bevel. This produces a radial movement from an axial movement. This arrangement provides the expansion chuck with a very large clamping force. A further very important advantage is the absolutely concentric clamping of the cores, because all expansion lugs expand uniformly to the same extent. This makes very high winding speeds achievable.

The mantles of the expansion chucks can be made of numerous different materials with various wall thicknesses – depending on the application envisaged by the customer. Based on the Vorwald standard the expansion chucks are customised according to the modular design principle.



## Sectional drawing of an expansion chuck, Series 811



### Options

- Expansion lug or expansion leaf with various surfaces
- Quick adaptation to various core diameters with adapters; see Section 4.3
- Special dimensions are possible on inquiry

### Advantages

- + Transmission of highest torques
- + True running tolerance  $\pm 0.1$  mm
- + Quick clamping and unclamping
- + Absolutely centred clamping of the core
- + Utilisable with a very wide range of external clamping systems

Available expansion chuck diameters ranging from 50 to 500 mm



# Mechanical adapter

## Series 900

with individual expansion lugs or expansion leafs

The Vorwald adapters of the Series 900 with individual expansion lugs or expansion leafs are required when it is necessary to effect frequent change-overs between various core sizes.

Several different types of expansion lugs are available for covering all requirements: Lengthwise grooved expansion lugs made of steel and expansion lugs with smooth surface made of polyurethane or screwed versions with various different surface profiles that are quickly interchangeable.

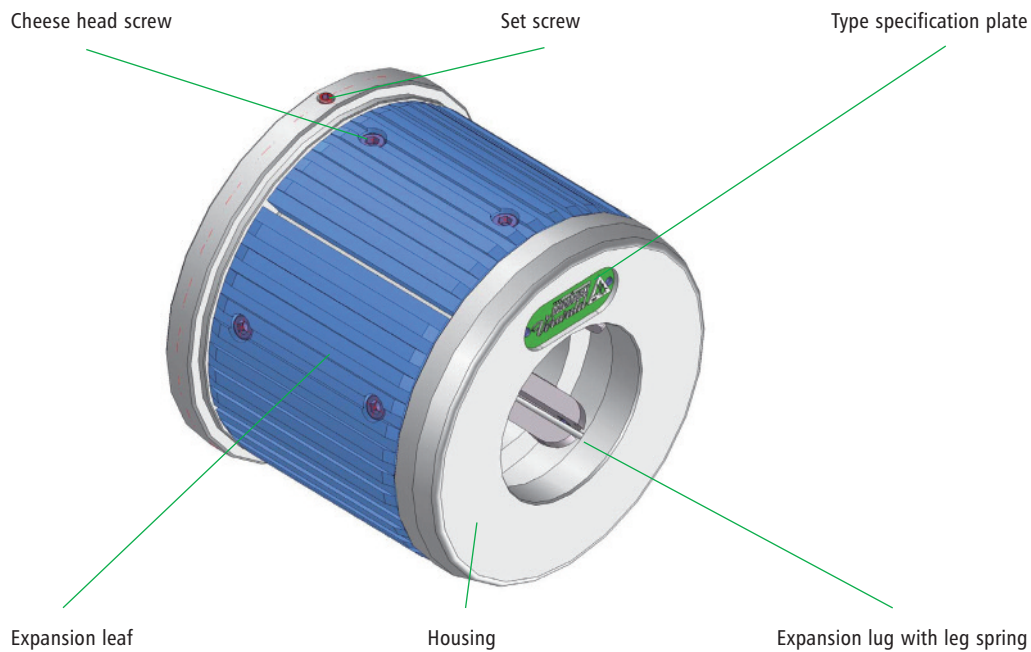
The various different surfaces of the expansion lugs or expansion leafs ensure greatest possible torque transmission into the various different core materials. All expansion lugs and expansion leafs are equipped with a retraction system that ensures reliable contraction. This makes push-on and push-off of the cores easy. The adapters are available for cores with internal diameters up to 500 mm.

Activation takes place with the associated expansion chuck, i.e. the adapter is positioned by a parallel key, pushed onto a expansion chuck and secured by radial set screws against axial slip. When the carrier expansion chuck expands, the expansion lugs or expansion leafs of the adapter are pressed outwards too. A further very important advantage is the absolutely concentric clamping of the cores, because all expansion lugs expand uniformly to the same extent. This makes very high winding speeds achievable.

The mantles of the adapters can be made of numerous different materials with various wall thicknesses – depending on the intended application by the customer. Based on the Vorwald standard the adapters are customised according to the modular design principle.



## Sectional drawing of an adapter, Series 900



### Options

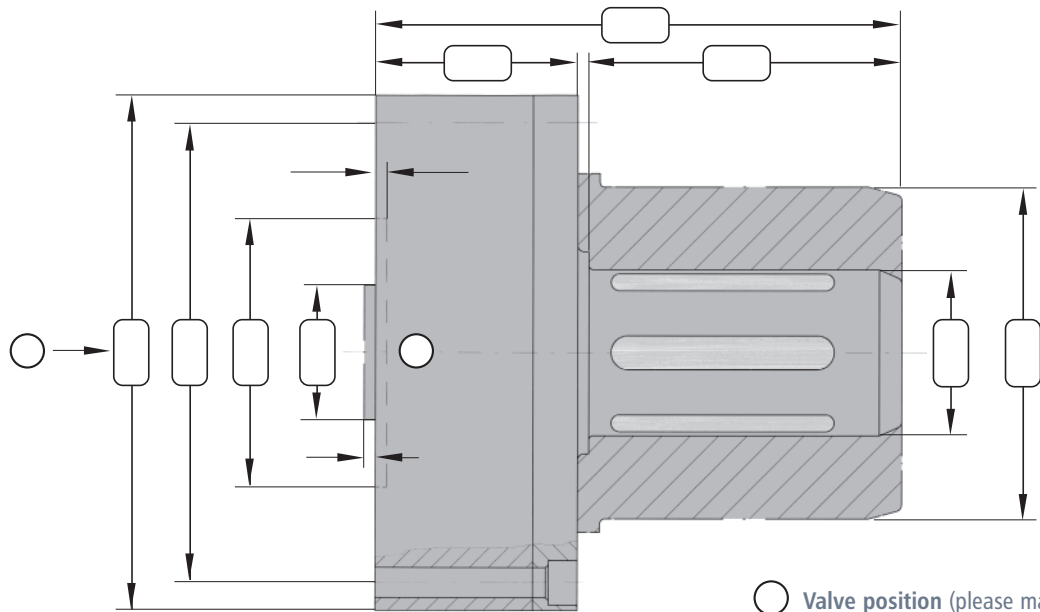
- Expansion lug or expansion leafs with various different surfaces
- Quick adaptation to various different core diameters
- Special dimensions are possible on inquiry

### Advantages

- + Transmission of highest torques
- + True running tolerance  $\pm 0.1$  mm
- + Quick clamping and unclamping with the existing expansion chuck
- + Absolutely centred clamping of the core

Available adapter diameters  
ranging from 98 to 500 mm





### Core information for expansion chuck

Core internal diameter  $\pm$  \_\_\_\_\_  
Core external diameter \_\_\_\_\_  
Core material \_\_\_\_\_

### Core information for adapter

Core internal diameter  $\pm$  \_\_\_\_\_  
Core external diameter \_\_\_\_\_  
Core material \_\_\_\_\_

- ☐ Unwind unit      ☐ Centre drive unit  
☐ Rewind unit      ☐ Circumferential drive unit

### Comments

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Technical requirements

Material \_\_\_\_\_  
Web speed (max.) \_\_\_\_\_ m/min  
Web tension (max.) \_\_\_\_\_ N;(N/cm)  
Working width (max.) \_\_\_\_\_ mm  
Working width (min.) \_\_\_\_\_ mm  
Total drive torque \_\_\_\_\_ Nm  
Drive ☐ on one side ☐ on both sides  
Total braking torque (max.) \_\_\_\_\_ Nm  
Brake ☐ on one side ☐ on both sides  
Emergency stop \_\_\_\_\_ sec.  
Reel diameter \_\_\_\_\_ mm  
Reel weight (max.) \_\_\_\_\_ kg  
Reel weight (min.) \_\_\_\_\_ kg  
Central expanding ☐ yes ☐ no





## Representations in

Austria  
Czech Republic  
Denmark  
Finland  
France

Germany  
Great Britain  
Greece  
Hungary  
Iran

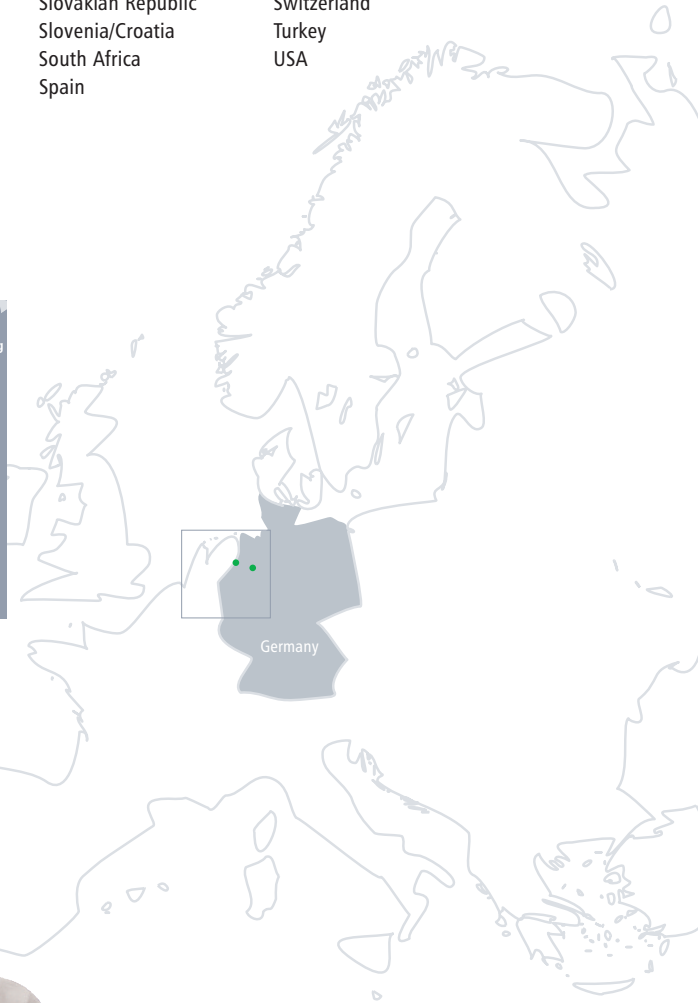
Israel  
Macedonia  
Netherlands  
Norway  
Poland

Portugal  
Slovakian Republic  
Slovenia/Croatia  
South Africa  
Spain

Sweden  
Switzerland  
Turkey  
USA



Production plant in Neuenhaus



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