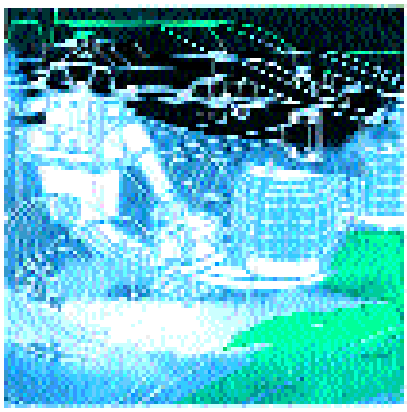
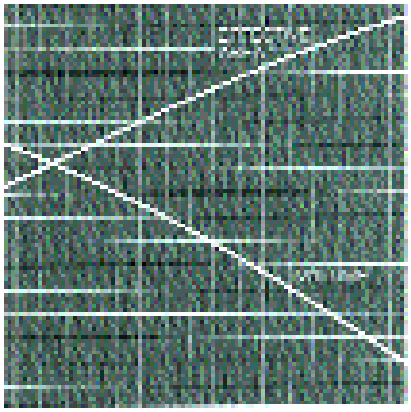
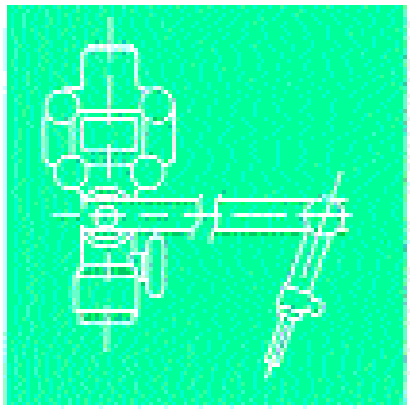
TRELLEBORG
AUTOMOTIVE

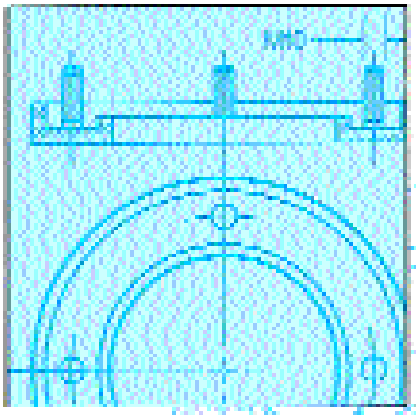
PNEURIDE®

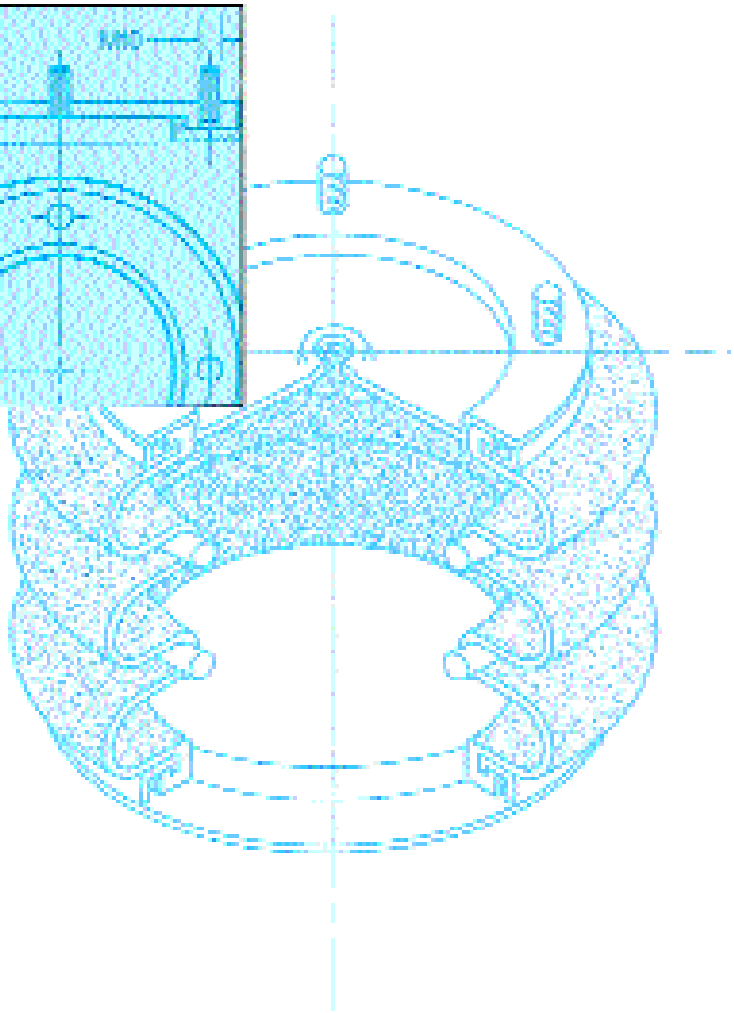
Technical
data









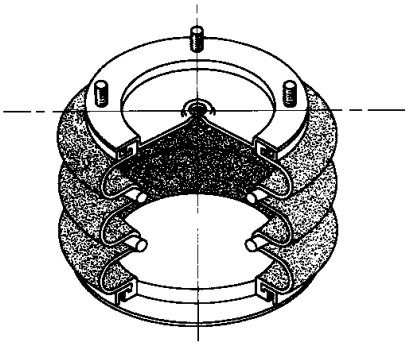


Bellows

TRELLEBORG
AUTOMOTIVE

PNEURIDE®

TECHNICAL DATA



BELLOWS

Certificate No.94/3956

TRELLEBORG
AUTOMOTIVE

Introduction

Trelleborg Pneuride Bellows are used in a wide variety of applications:

Primary application:
Vehicle Suspensions

Trelleborg Pneuride Bellows are used as the suspension media in all sorts of vehicles (buses, trucks, trailers, semi trailers, demountable systems, container handling systems, coaches, ambulances, etc).

Secondary application:
Industrial Applications

Trelleborg Pneuride Bellows whilst originally designed for vehicle applications have a range of unique characteristics which make them extremely attractive for industrial applications such as pneumatic/hydraulic actuation, isolation mounts, height and level control devices. Although not specifically designed as a noise insulator Pneuride Bellows do reduce noise transmission.

The Trelleborg Pneuride Bellows are produced in a range of sizes from 4½ x 1 up to 21½ x 2.

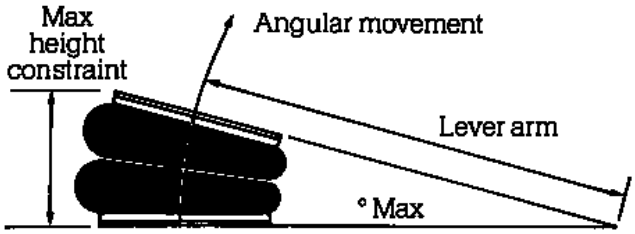
Lobes

Trelleborg Pneuride Bellows are manufactured using a mixture of elastomers and textile reinforcement which produces a high quality, high performance product. They are frictionless, economical and virtually maintenance free and come packaged in one of three forms.
(1, 2, or 3 lobes).

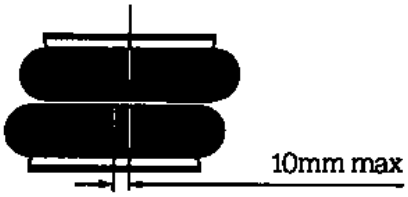
PNEURIDE®

TRELLEBORG
AUTOMOTIVE

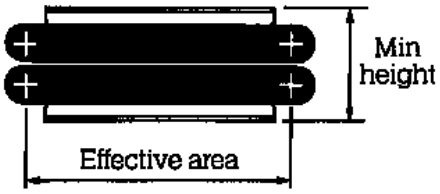
Angular & axial displacement

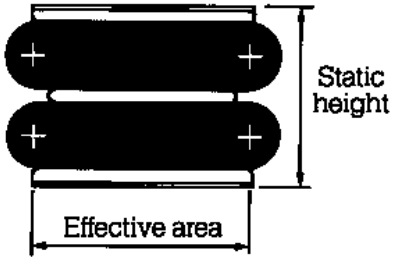


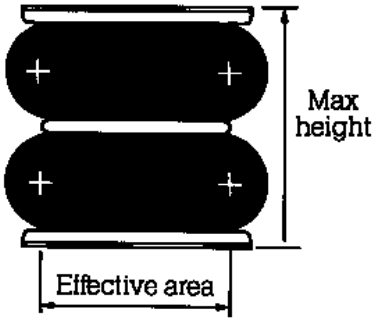
1 lobe 15°
2 lobes 15°
3 lobes 7°-15° Dependent on size.



Key







Conditions of use

Maximum working pressure	8bar
Burst pressure	25-50 bar
Maximum angle between top and bottom plates. Dependent on size.	7°-15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

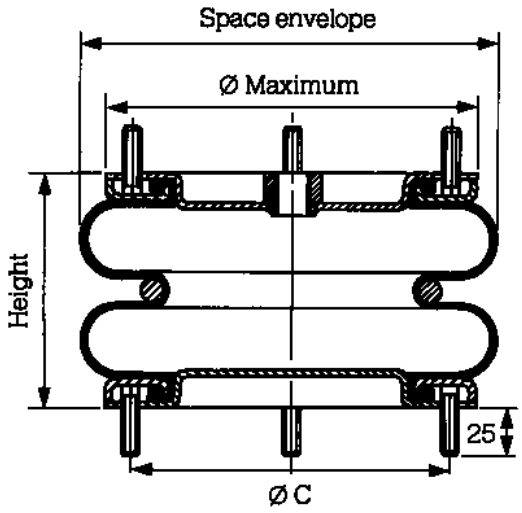
Materials

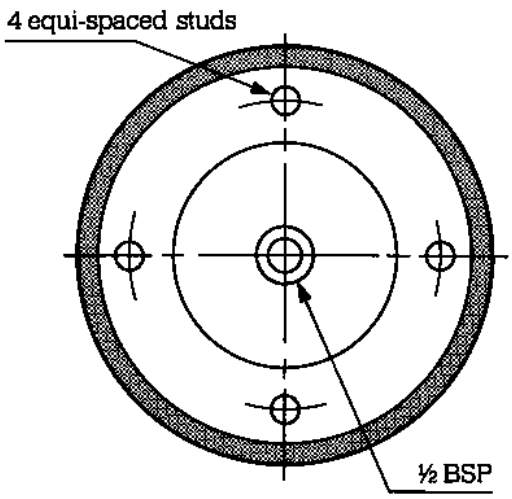
- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from either mild steel and protected by zinc passivate and yellow chromate or cast aluminium alloy.

Note

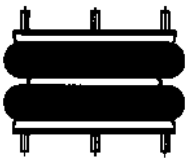
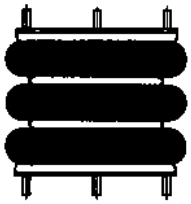
This bellow assembly can be completely dismantled.

PNEURIDE®





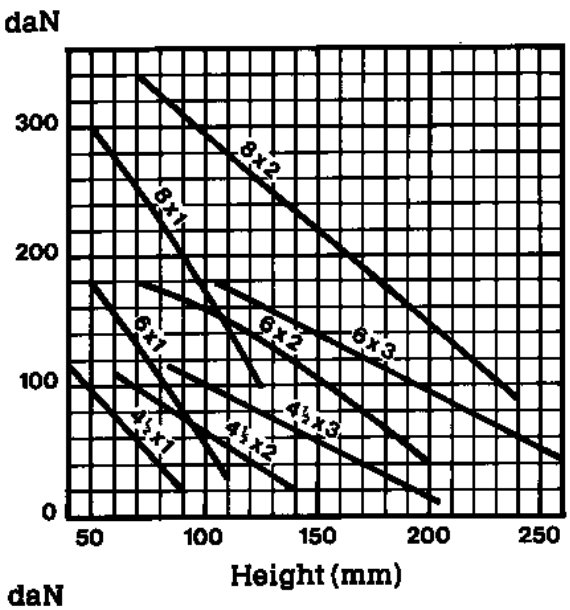
Characteristics

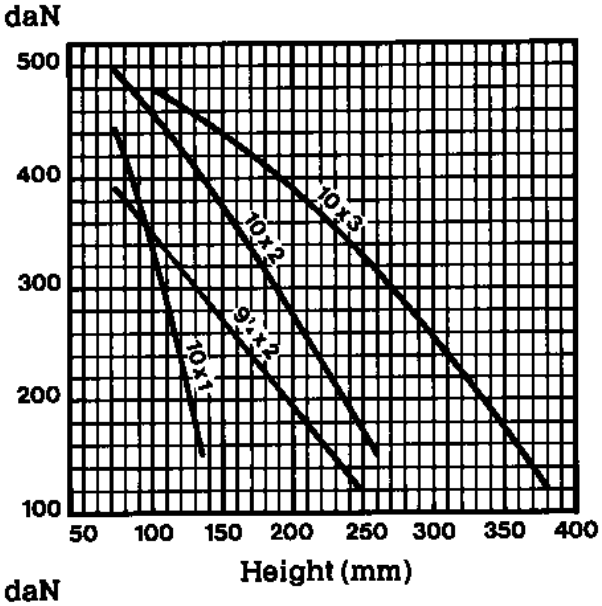
Bellows	Type	Ø Max	Minimum height	Maximum height	Total stroke	Static height	Ø C	Ø Space envelope	Weight in kg
 1 lobe	**4½ × 1**	125	45	90	45	65	93	140	0,75
	6 × 1	168	58	108	50	80	127	180	1,95
	8 × 1	230	47	120	73	90	156	240	3,05
	10 × 1	280	50	135	85	95	181	295	3,8
	12 × 1	330	50	145	95	95	232	345	4,75
	14½ × 1	395	47	165	118	105	283	410	6,9
 2 lobes	**4½ × 2**	125	65	145	80	100	93	140	0,93
	6 × 2	168	73	170	100	120	127	180	2,25
	8 × 2	230	72	225	153	150	156	240	3,75
	9¼ × 2	260	70	240	170	160	168	275	4,5
	10 × 2	280	70	240	170	160	181	295	4,6
	12 × 2	330	74	240	166	160	232	345	5,85
	14½ × 2	395	70	280	210	180	283	410	8,5
	16 × 2	430	77	320	243	180	283	445	8,8
 3 lobes	**4½ × 3**	125	100	200	100	145	93	140	1,15
	6 × 3	168	105	255	150	180	127	180	2,55
	10 × 3	280	100	365	265	235	181	295	5,4
	12 × 3	330	100	430	330	222	232	345	7
	14½ × 3	395	100	476	376	280	283	410	10
	16 × 3	430	125	500	375	280	283	445	16

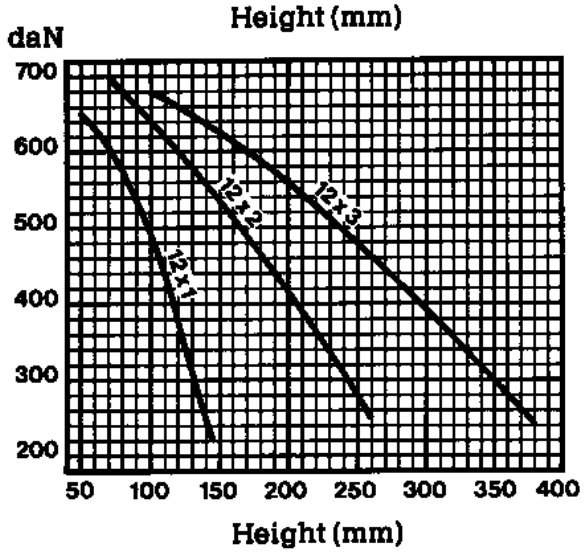
TRELLEBORG
AUTOMOTIVE

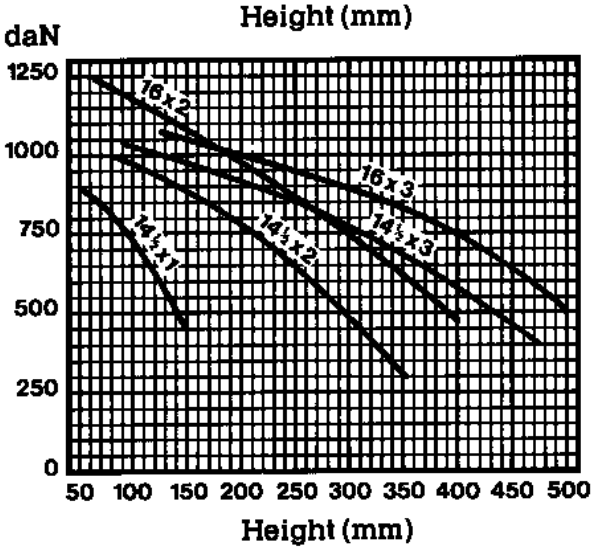
Force Table

The force developed is a function of the bellows crossectional area. In the tables below the y-axis shows the force produced at one bar pressure for a variety of x-axis height.









Load necessary to obtain the minimum height without air in the bellows

Type	4½" x1	4½" x2	4½" x3	6" x1	6" x2	6" x3	8" x1	8" x2	9¼" x2	10" x1	10" x2	10" x3 4 ply	12" x1	12" x2	12" x3 4 ply	14½" x1	14½" x2	14½" x3 4 ply	16" x2	16" x3 4 ply
Static height (mm)	65	100	145	70	120	180	90	150	160	95	160	235	95	160	222	105	180	280	180	280
Min. height (mm)	45	65	100	58	70	102	47	72	70	50	70	100	47	74	100	147	70	100	77	125
Load in daN	12	15	20	15	20	12	13	14	12	12	11	77	10	10	81	9	9	86	9	65

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Isolation

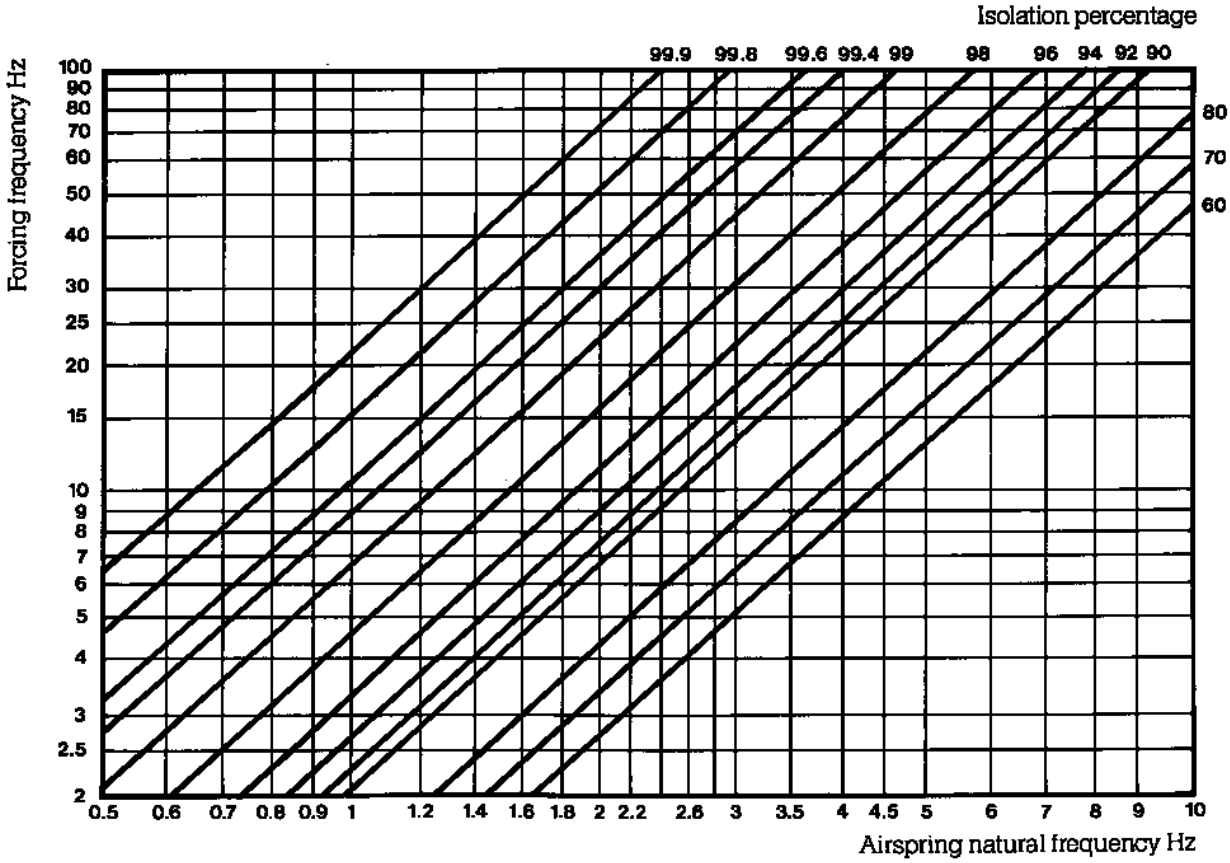
Trelleborg Pneuride Bellows are an excellent solution to vibration isolation problems.

The table opposite shows the natural frequency of the bellows at static height when pressurised at 4 bar (0.4 Mpa).

The table below allows the calculation of the percentage isolation at given forcing frequencies and natural airspring frequencies.

Dimension	Frequency (Hz) at static height	Static height (mm)	Load in kg at 4 bar at static height
4½ × 1	4,80	65	265
4½ × 2	2,80	100	265
4½ × 3	2,26	145	265
6 × 1	4,25	80	490
6 × 2	2,28	120	522
6 × 3	1,75	180	580
8 × 1	2,98	90	816
8 × 2	1,99	150	897
9¼ × 2	1,95	160	1088
10 × 1	2,84	95	1428
10 × 2	1,88	160	1448
10 × 3	1,65	235	1387
12 × 1	2,81	95	2080
12 × 2	1.66	160	2080
12 × 3	1,54	222	2040
14½ × 1	2,54	105	3060
14½ × 2	1,71	180	3100
14½ × 3	1,44	280	3264
16 × 2	1,45	180	3672
16 × 3	1,21	280	3451

Absolute vibration isolation chart for air springs



PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Bellows Assembly DATA SHEETS

Technical Data

General Dimensions

Bellows Schematic

Bellows Mounting Data

Effective Area Curves

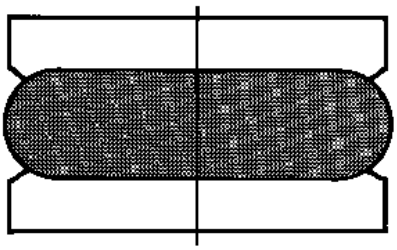
Volume Curves

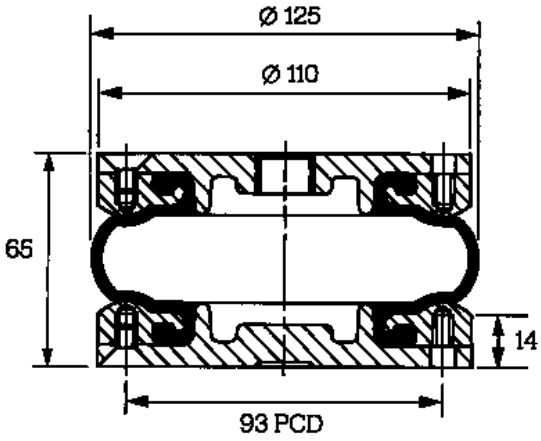
PNEURIDE®

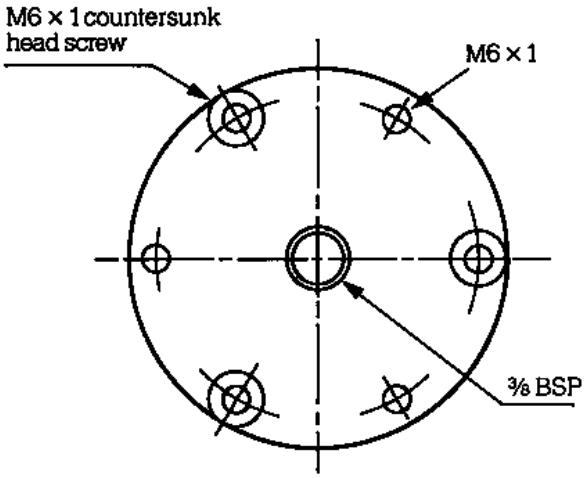
Bellows
4½"x1

A3 1337 00 32
PNP 30559 01 06
PNP 30559 B1 05

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	50 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from aluminium alloy.

Note

This bellow assembly can be completely dismantled.

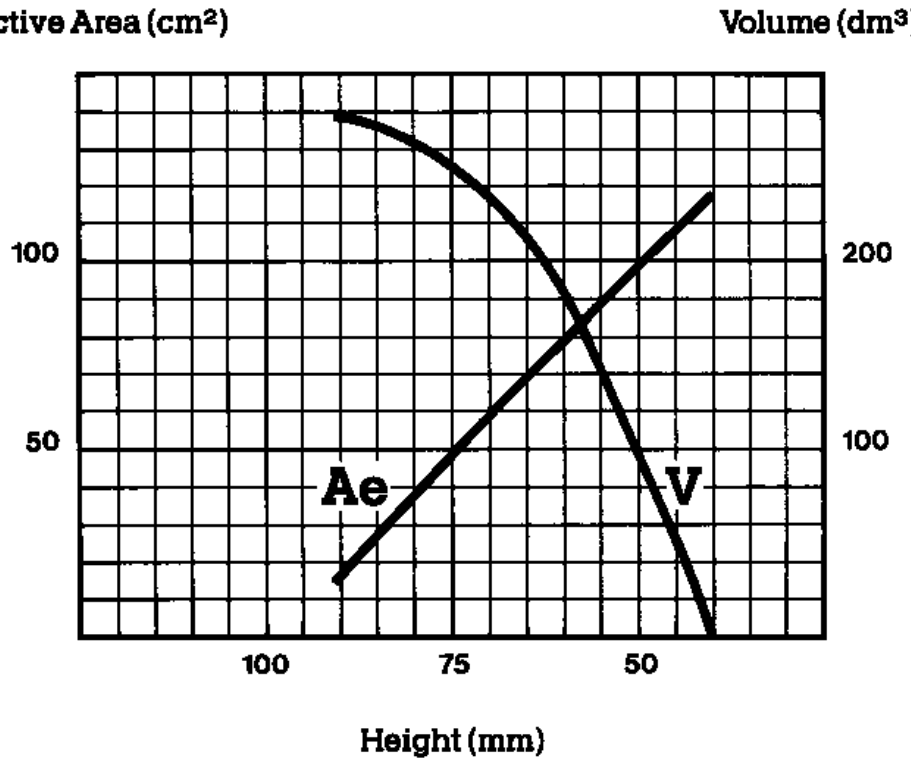
Dimensions

Maximum diameter	**125**	**mm**
Space required	**140**	**mm**
Minimum height	**45**	**mm**
Maximum height	**90**	**mm**
Total stroke	**45**	**mm**
Static height	**65**	**mm**
Effective area at static height	**65**	**cm²**
Bellows weight	**0.75**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

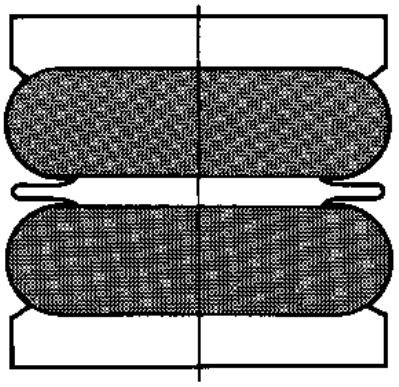
The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

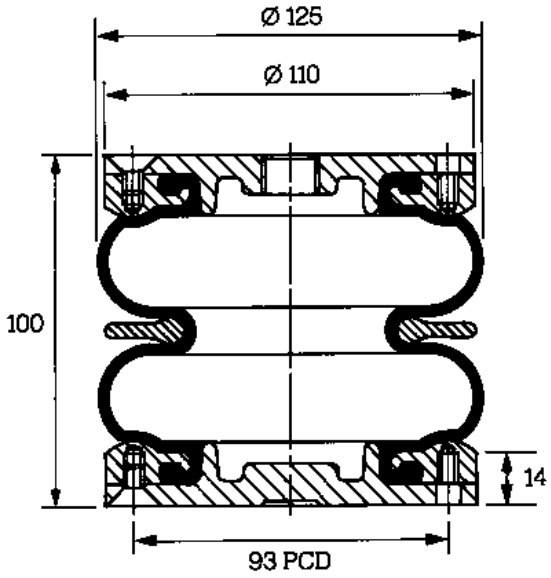
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

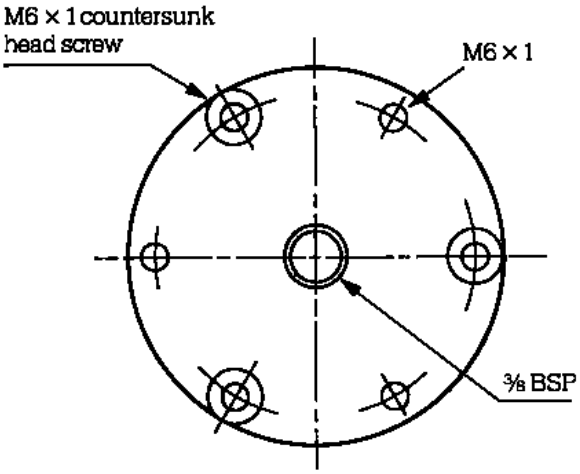
Bellows
4½"x2

PNP 30728 03 00
PNP 30559 01 07
PNP 30559 B1 09

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	50 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from aluminium alloy.

Note

This bellow assembly can be completely dismantled.

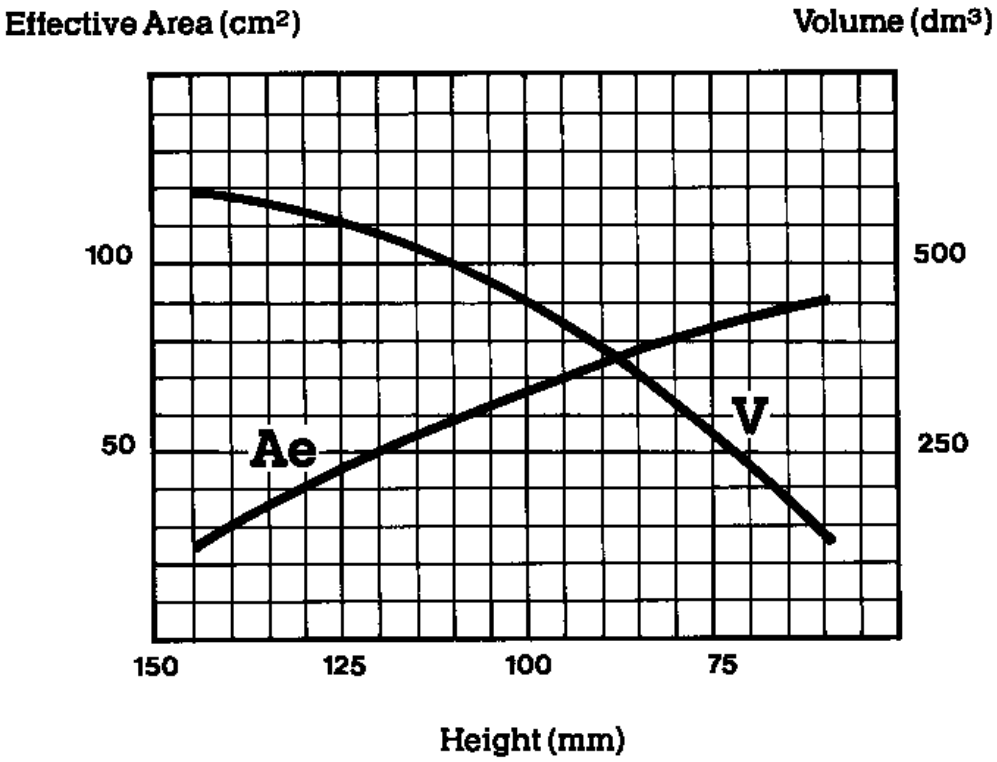
Dimensions

Maximum diameter	**125**	**mm**
Space required	**140**	**mm**
Minimum height	**65**	**mm**
Maximum height	**145**	**mm**
Total stroke	**80**	**mm**
Static height	**100**	**mm**
Effective area at static height	**67**	**cm²**
Bellows weight	**0.93**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

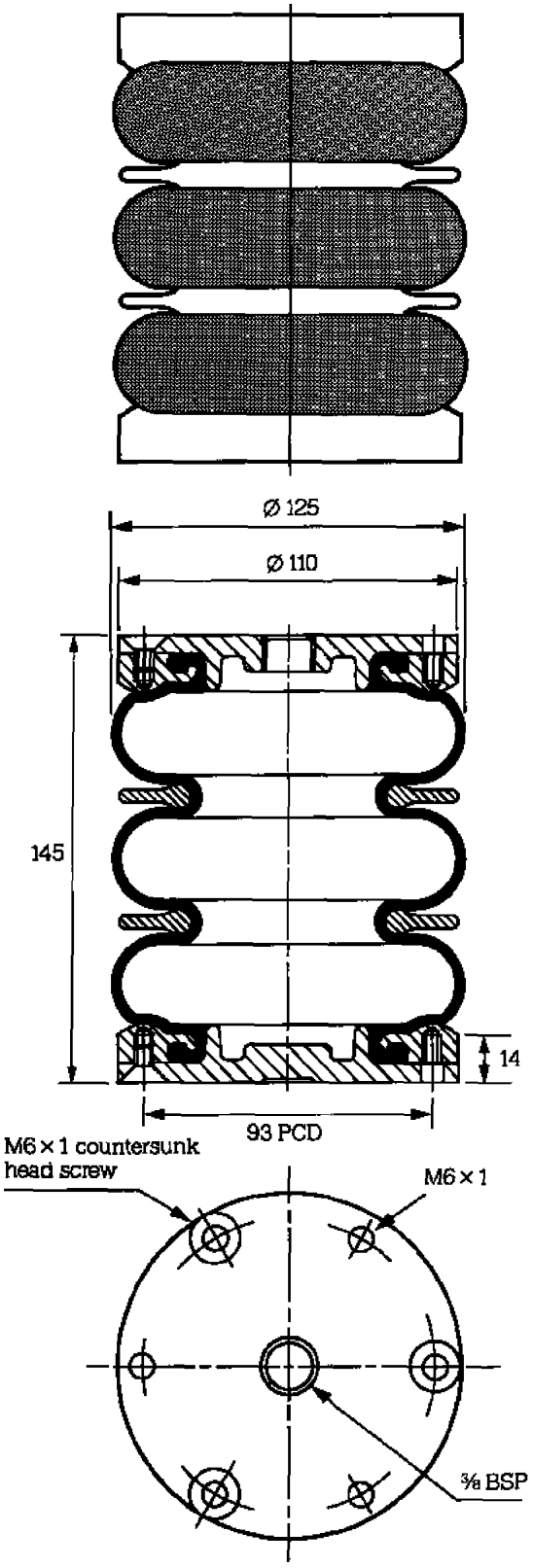
The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

Bellows
4½"x3

PNP 30559 01 08

TRELLEBORG
AUTOMOTIVE



Conditions of use

Maximum working pressure	8 bar
Burst pressure	50 bar
Maximum angle between top and bottom plates	7°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from aluminium alloy.

Note

This bellow assembly can be completely dismantled.

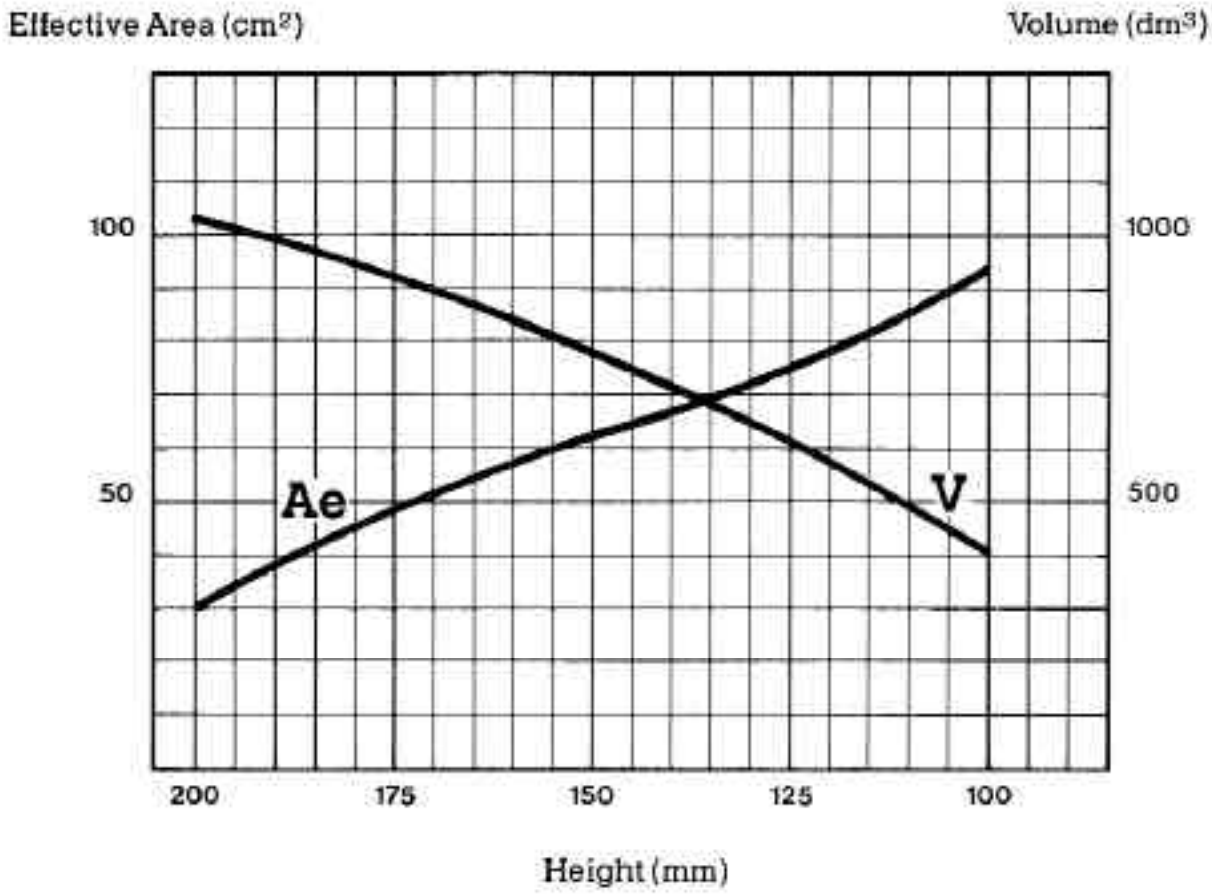
Dimensions

Maximum diameter	**125**	**mm**
Space required	**140**	**mm**
Minimum height	**100**	**mm**
Maximum height	**200**	**mm**
Total stroke	**100**	**mm**
Static height	**145**	**mm**
Effective area at static height	**800**	**cm²**
Bellows weight	**1.15**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

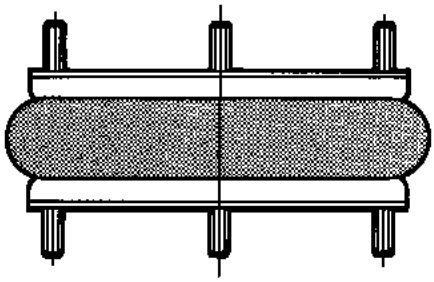
The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

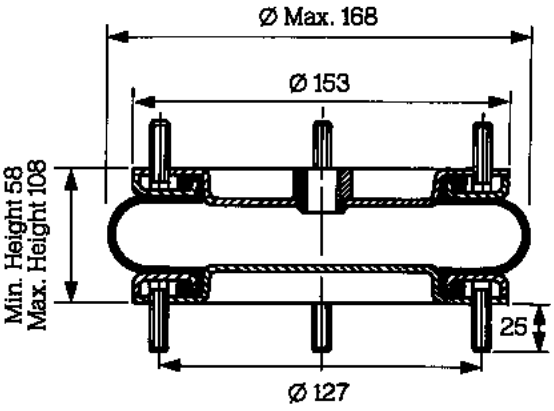
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

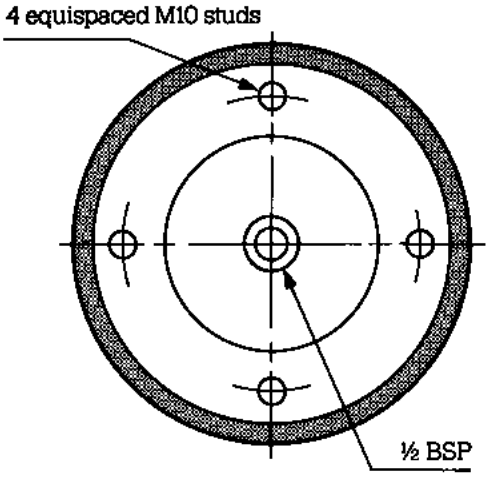
Bellows
6”x1

PNP 30405 02 00
A 3 1472 0B 23
A 3 1330 01 01

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	40 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

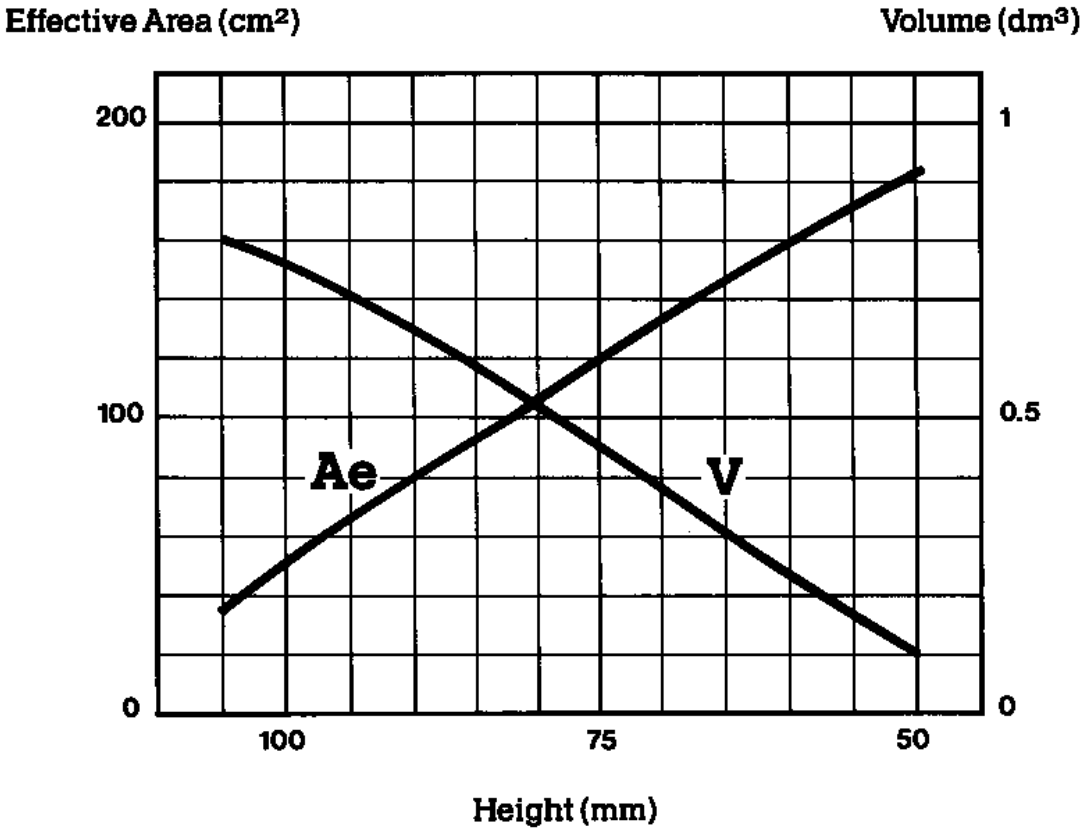
Dimensions

Maximum diameter	**168**	**mm**
Space required	**180**	**mm**
Minimum height	**58**	**mm**
Maximum height	**108**	**mm**
Total stroke	**50**	**mm**
Static height	**80**	**mm**
Effective area at static height	**135**	**cm²**
Bellows weight	**1,95**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

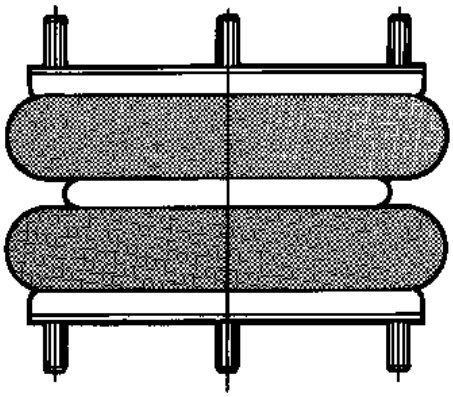
The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

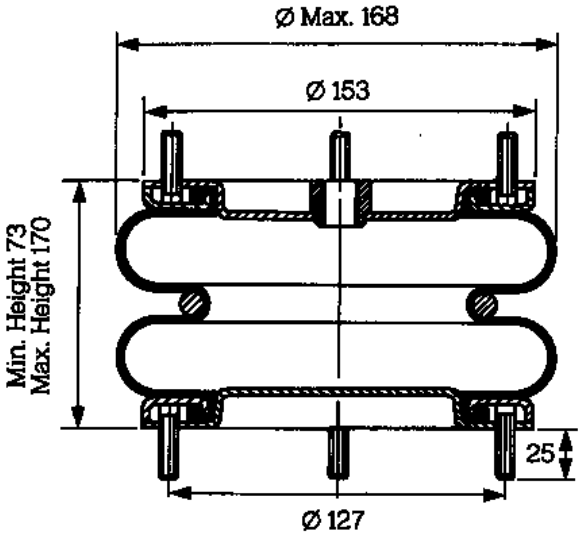
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

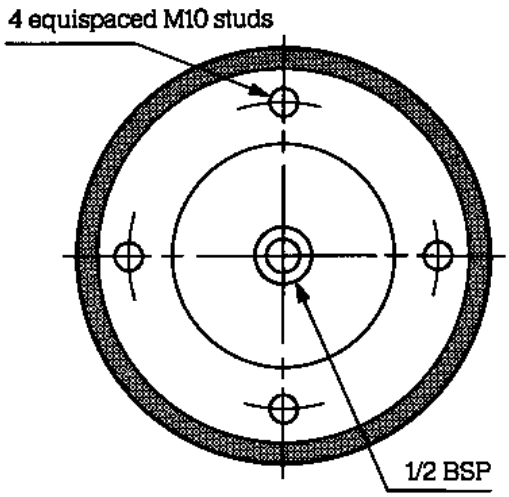
Bellows
6”x2

VSM 10177
PNP 30551 01 11
A 3 1330 02 01
A 3 1330 B2 01

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	40 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

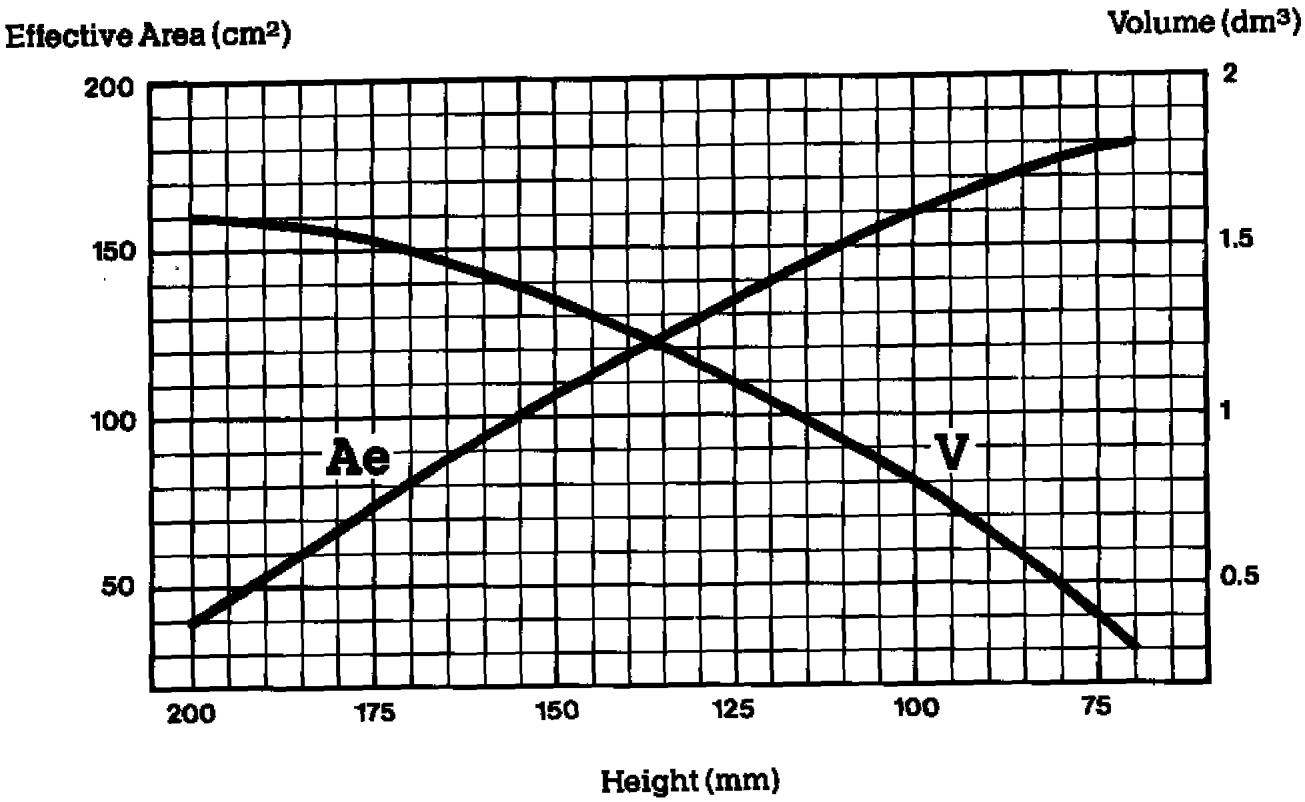
Dimensions

Maximum diameter	**168**	**mm**
Space required	**180**	**mm**
Minimum height	**73**	**mm**
Maximum height	**170**	**mm**
Total stroke	**97**	**mm**
Static height	**120**	**mm**
Effective area at static height	**140**	**cm²**
Bellows weight	**2,25**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

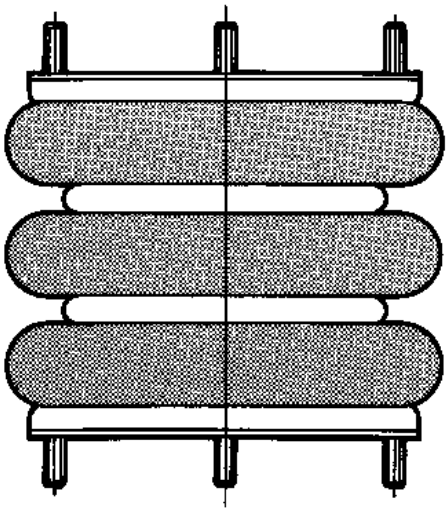
The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

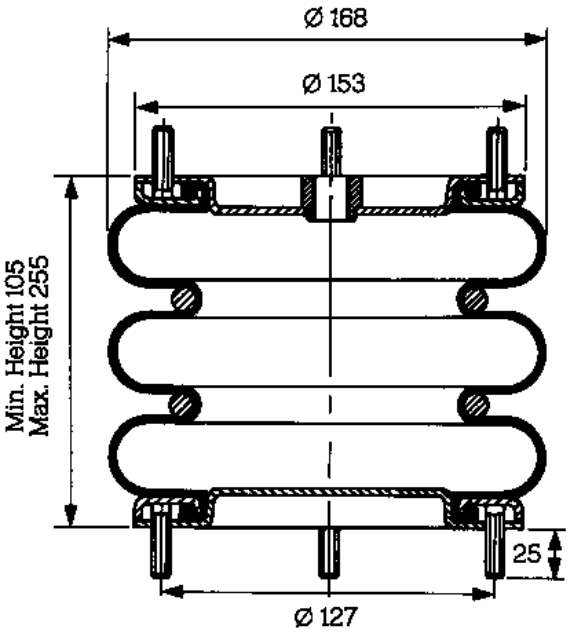
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

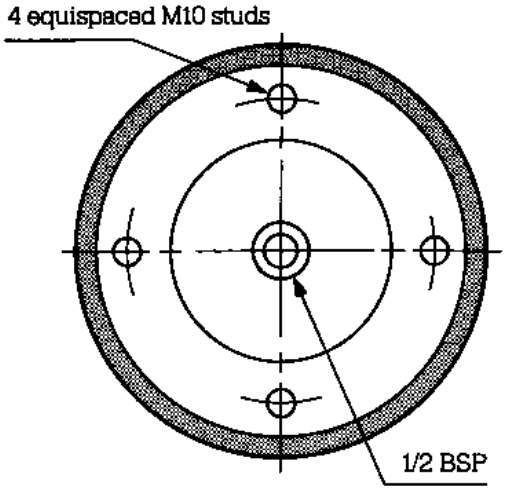
Bellows
6”x3

A 3 1330 03 01

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	40 bar
Maximum angle between top and bottom plates	10°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

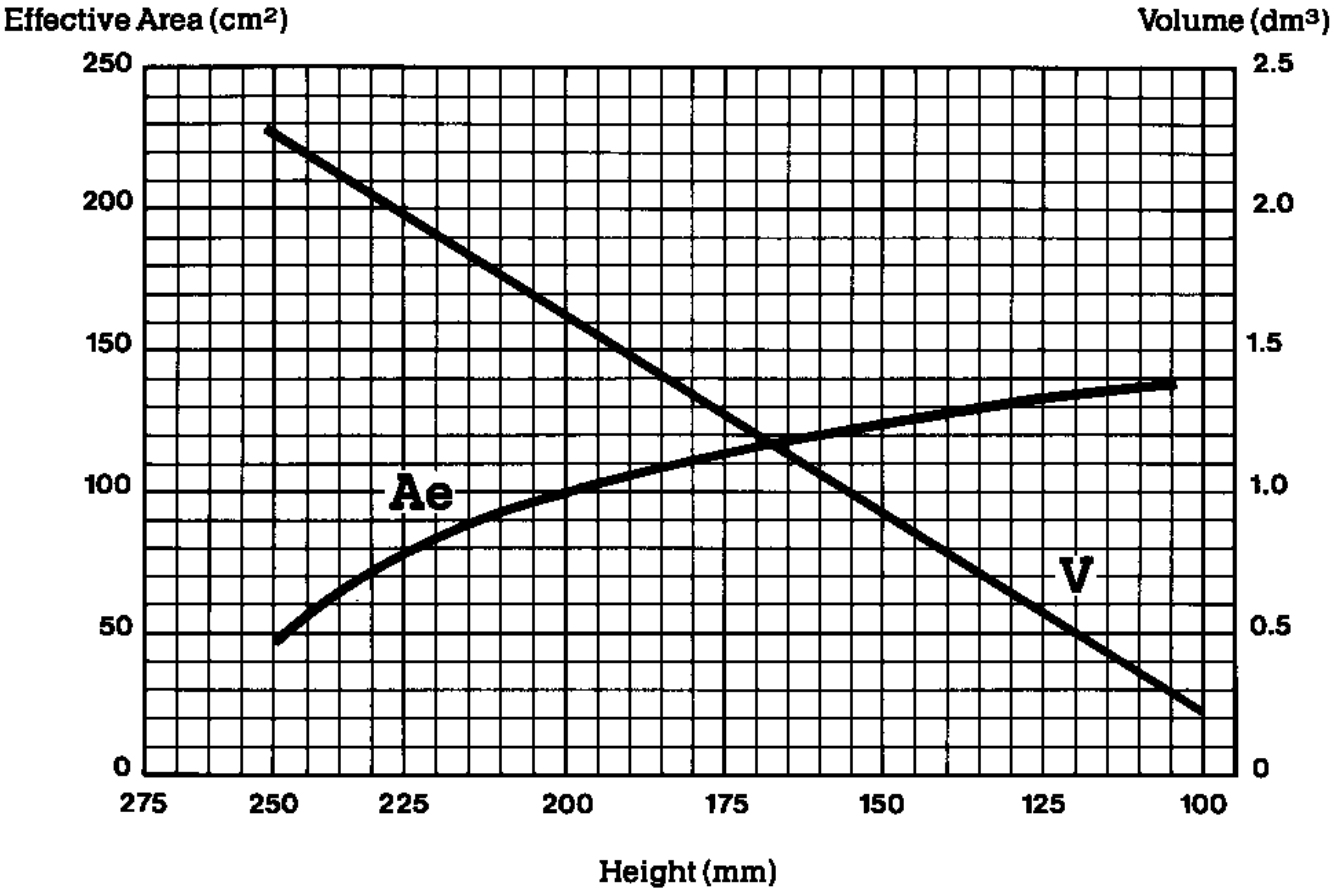
Dimensions

Maximum diameter	**168**	**mm**
Space required	**180**	**mm**
Minimum height	**102**	**mm**
Maximum height	**255**	**mm**
Total stroke	**150**	**mm**
Static height	**180**	**mm**
Effective area at static height	**350**	**cm²**
Bellows weight	**2,55**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

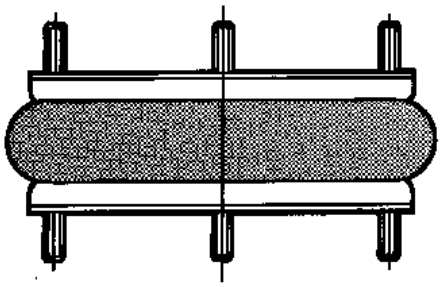
The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

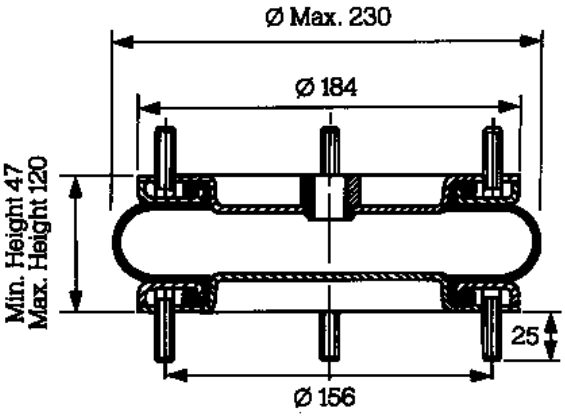
The values of the volume curve are 2easured at a pressure of 7 bar (0·7 MPa).

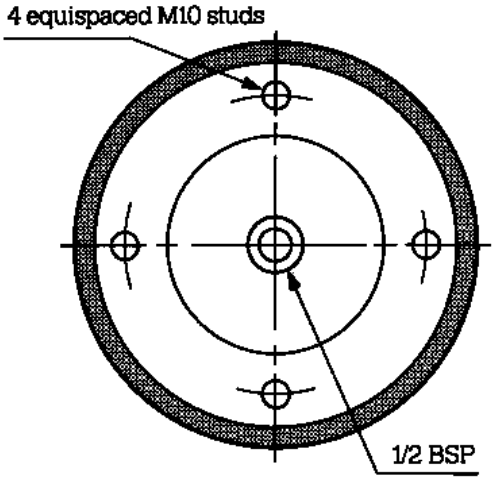
Bellows
8”x1

PNP 30406 02 00
A 3 1475 OB 26
PNP 30550 01 10

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	35 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

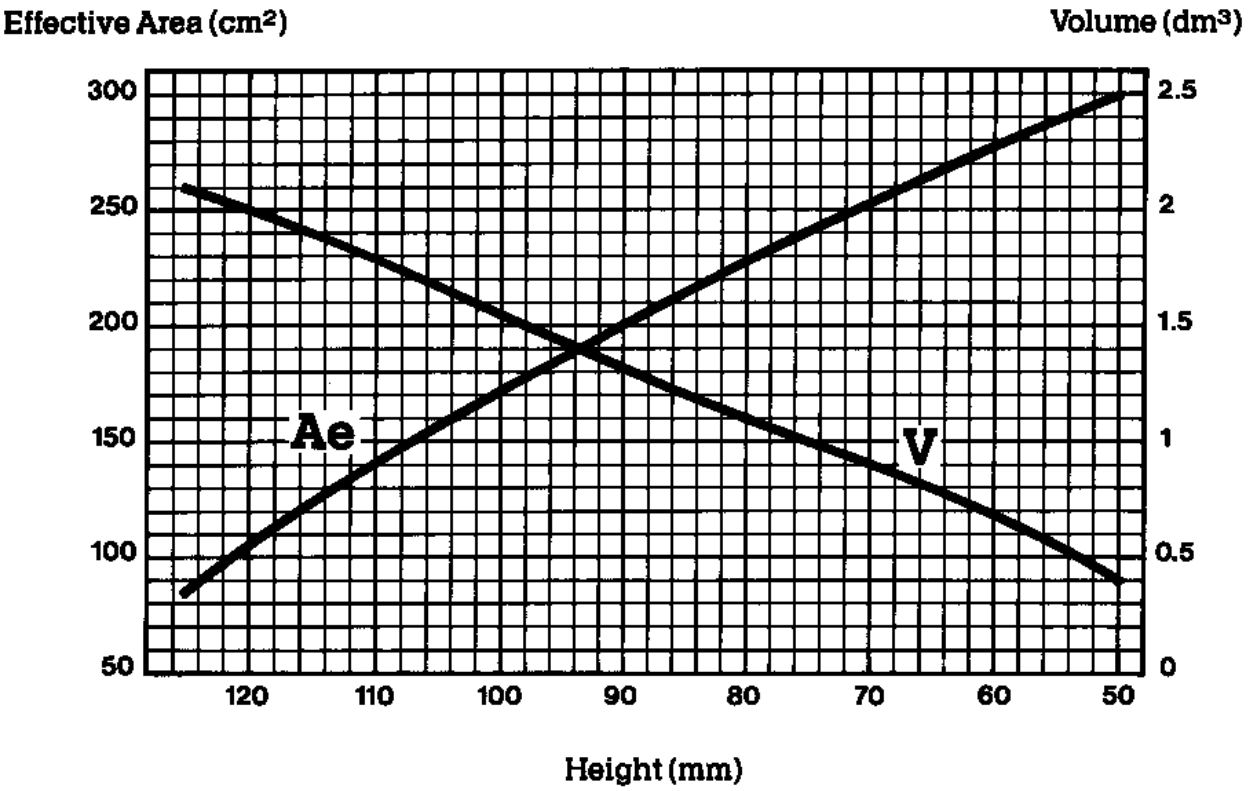
Maximum diameter	**230**	**mm**
Space required	**240**	**mm**
Minimum height	**47**	**mm**
Maximum height	**120**	**mm**
Total stroke	**73**	**mm**
Static height	**90**	**mm**
Effective area at static height	**200**	**cm²**
Bellows weight	**3,05**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

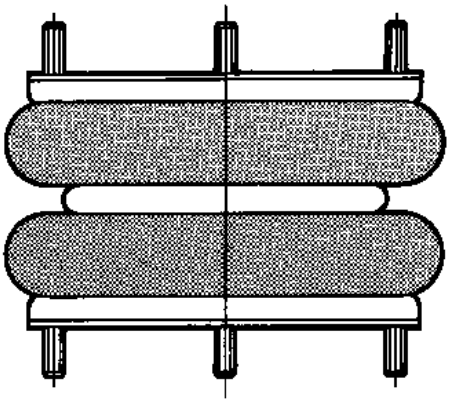
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

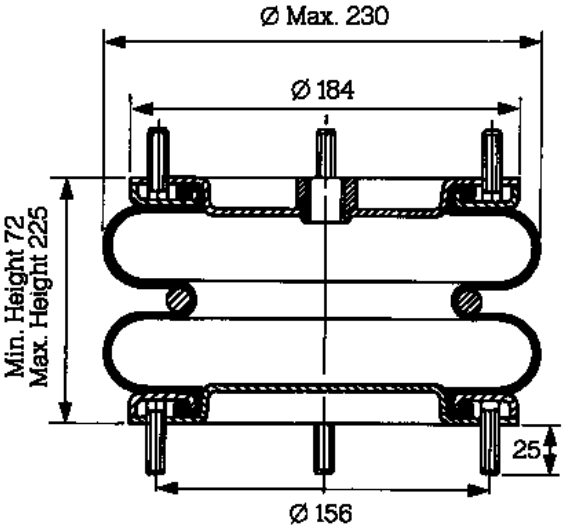
PNEURIDE®

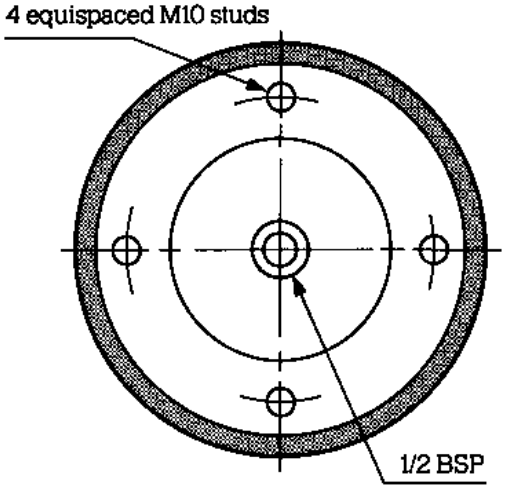
Bellows
8”x2

VSM 10180
A 3 1476 OB 27
PNP 30550 01 12
PNP 30550 01 11

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	35 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

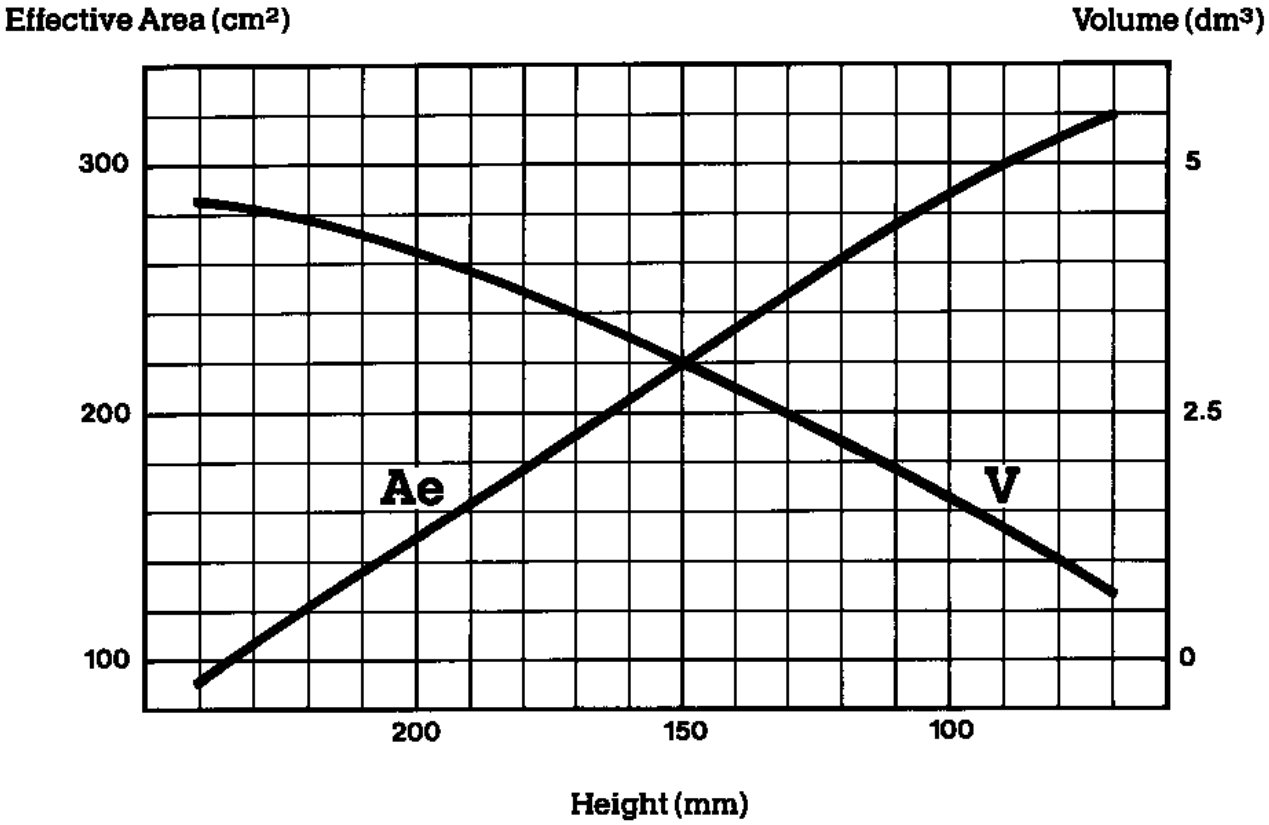
Dimensions

Maximum diameter	**230**	**mm**
Space required	**240**	**mm**
Minimum height	**72**	**mm**
Maximum height	**225**	**mm**
Total stroke	**153**	**mm**
Static height	**150**	**mm**
Effective area at static height	**220**	**cm²**
Bellows weight	**3,75**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

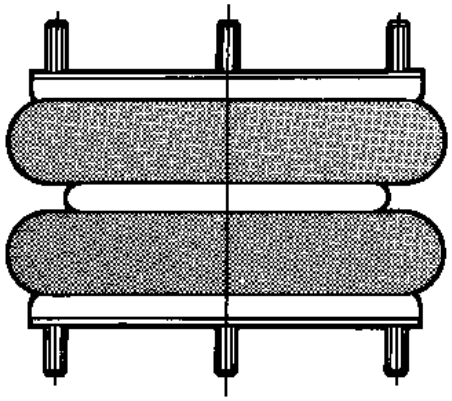
The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

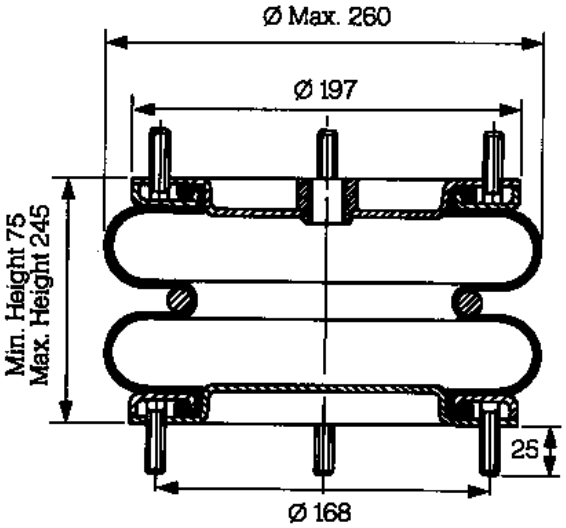
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

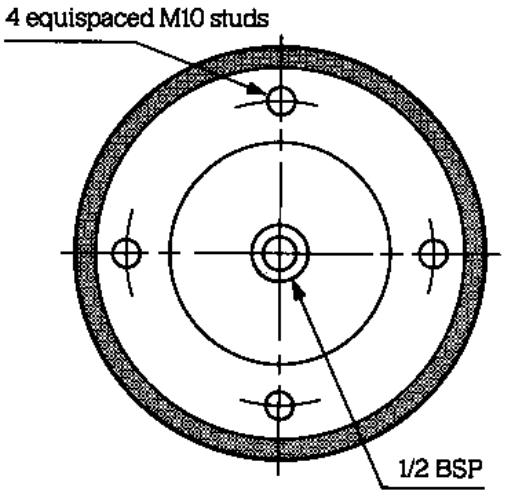
Bellows
9¼"x2

VSM 10131
PNP 30549 01 08

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	32 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

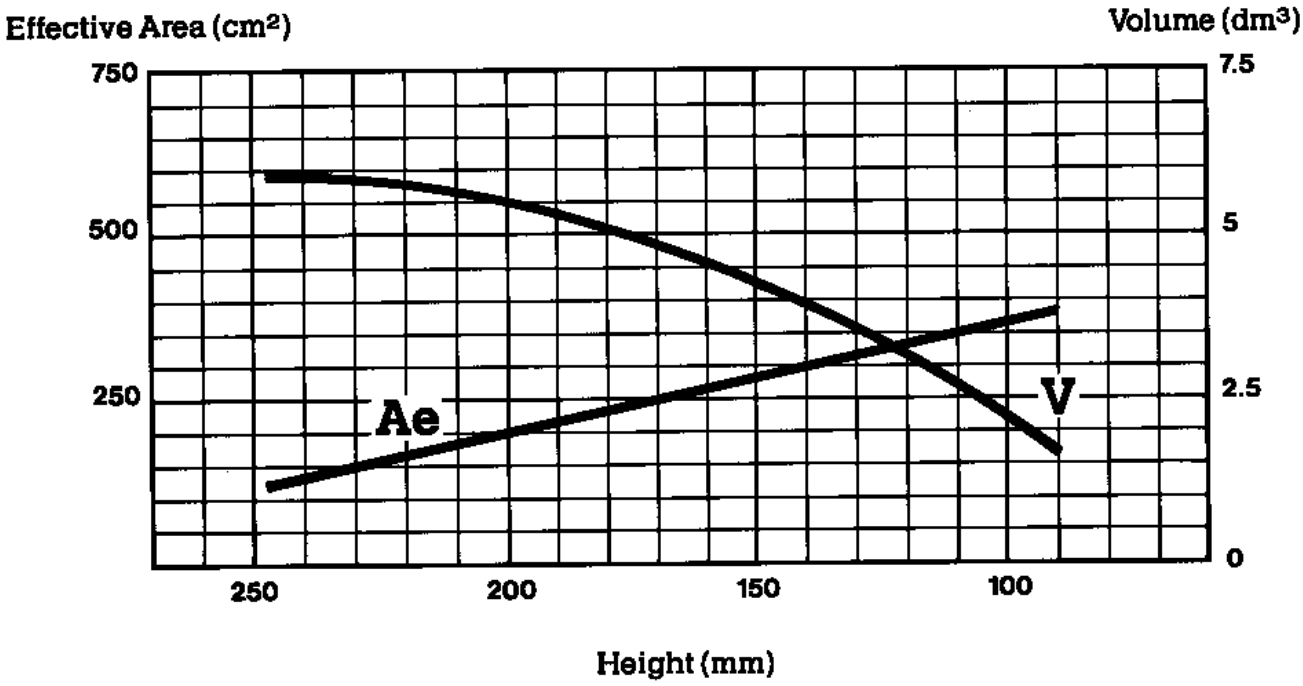
Maximum diameter	**260**	**mm**
Space required	**275**	**mm**
Minimum height	**70**	**mm**
Maximum height	**240**	**mm**
Total stroke	**120**	**mm**
Static height	**160**	**mm**
Effective area at static height	**272**	**cm²**
Bellows weight	**4,5**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

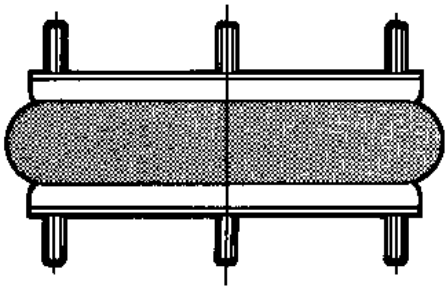
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

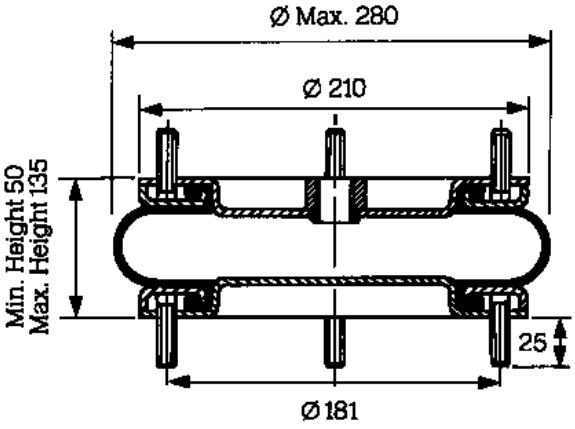
PNEURIDE®

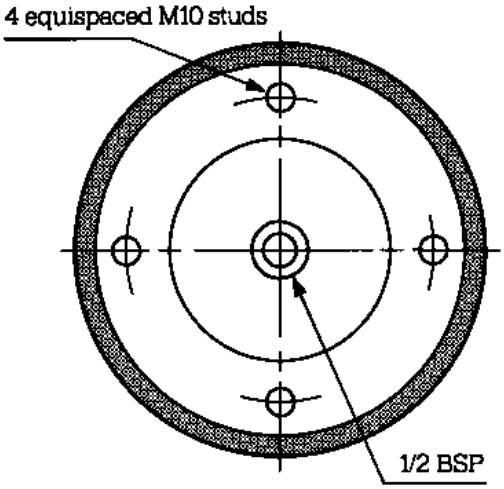
Bellows
10”x1

A 2 1407 00 22

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	28 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

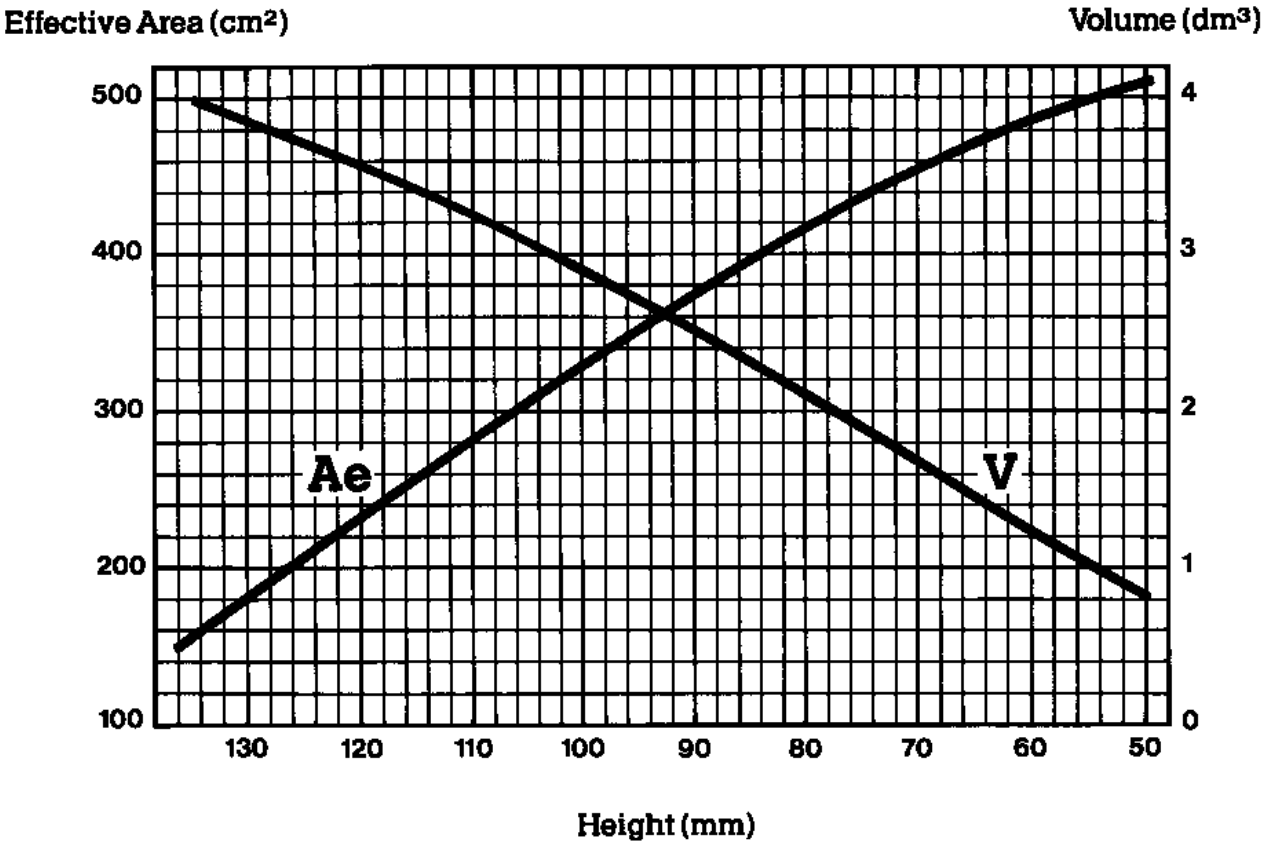
Dimensions

Maximum diameter	**280**	**mm**
Space required	**295**	**mm**
Minimum height	**50**	**mm**
Maximum height	**135**	**mm**
Total stroke	**85**	**mm**
Static height	**95**	**mm**
Effective area at static height	**350**	**cm²**
Bellows weight	**3,8**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

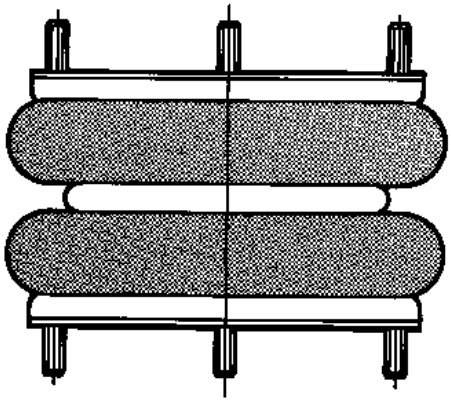
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

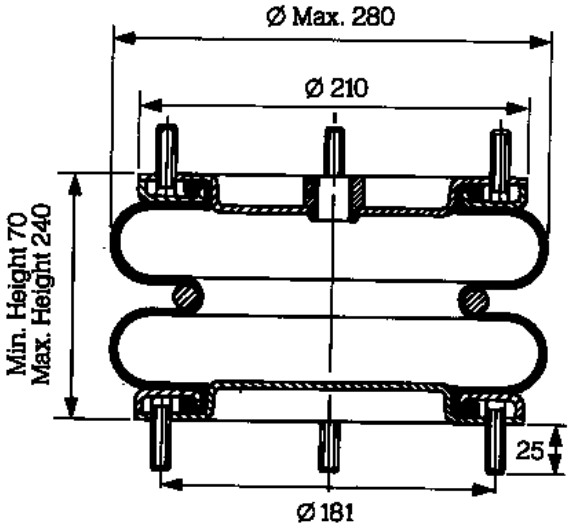
PNEURIDE®

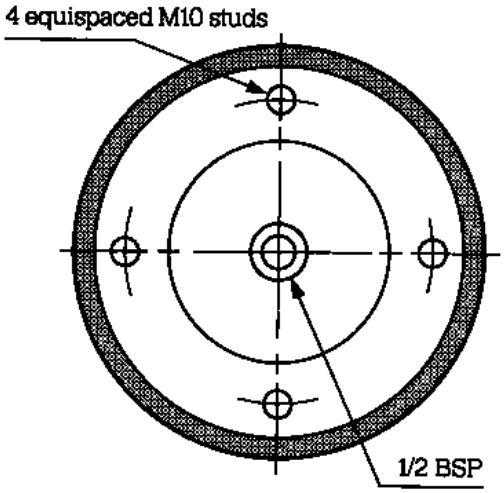
Bellows
10”x2

VSM 10176
A 3 1479 OB 20
PNP 30545 01 12

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	28 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

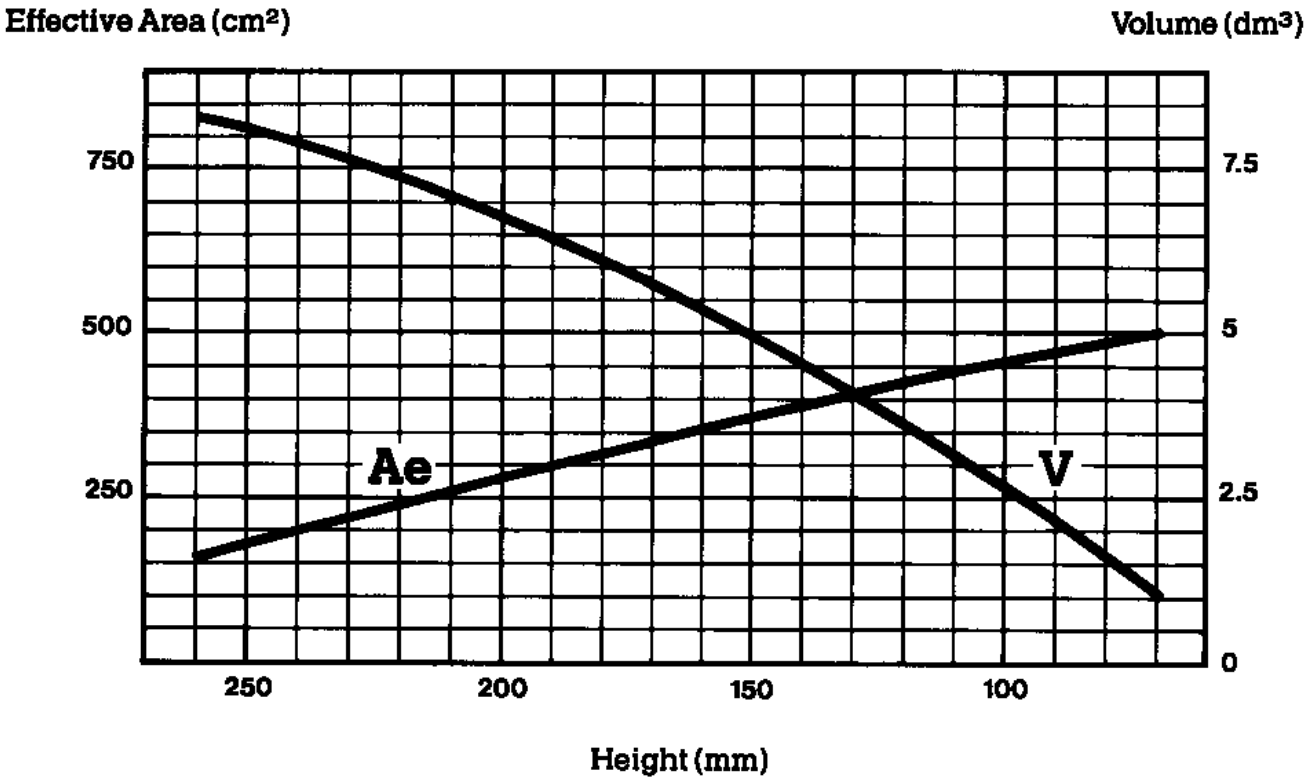
Maximum diameter	**280**	**mm**
Space required	**295**	**mm**
Minimum height	**70**	**mm**
Maximum height	**240**	**mm**
Total stroke	**170**	**mm**
Static height	**160**	**mm**
Effective area at static height	**355**	**cm²**
Bellows weight	**4,6**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

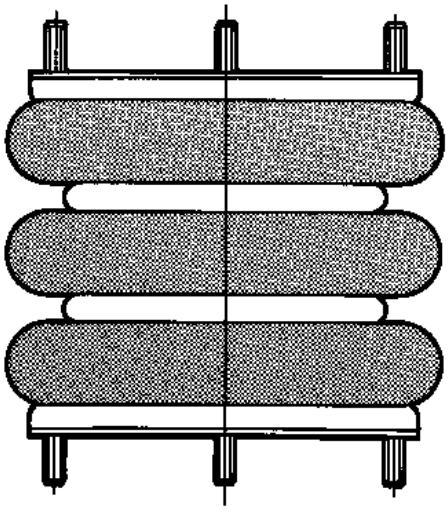
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

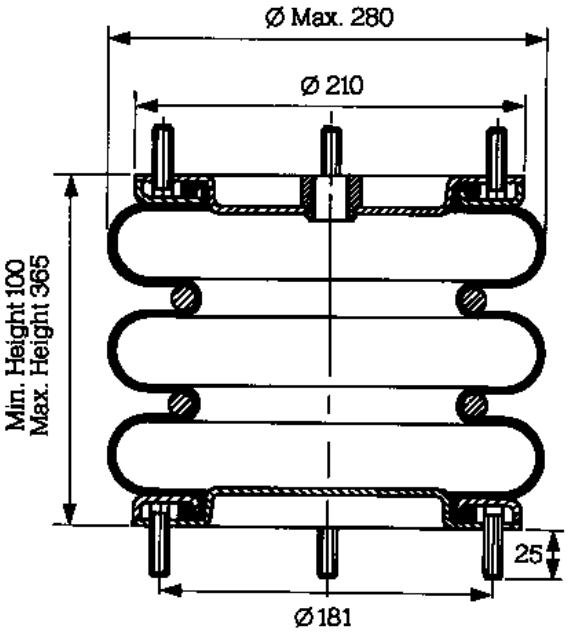
PNEURIDE®

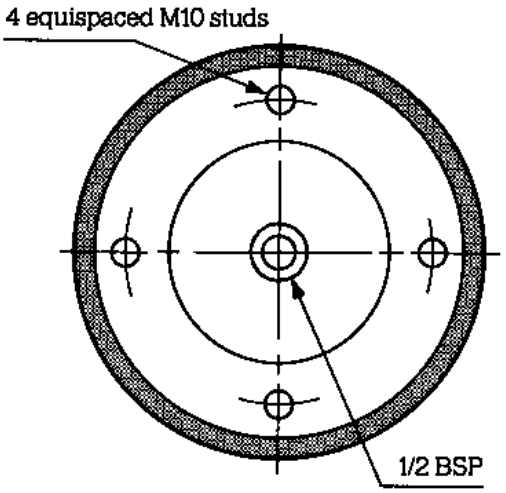
Bellows
10”x3

A 3 1480 OB 21
VSM 10798
PNP 30545 01 10

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	28 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

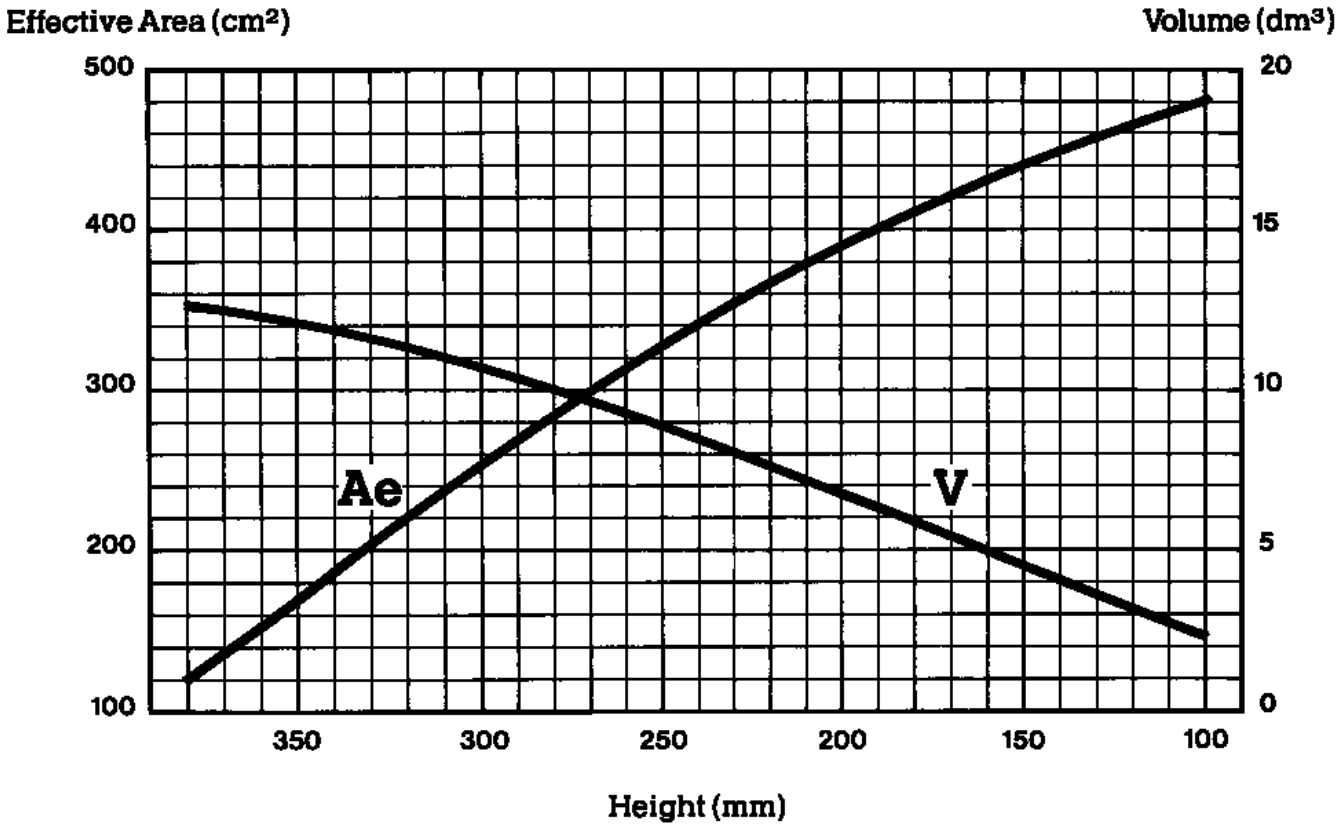
Maximum diameter	**280**	**mm**
Space required	**295**	**mm**
Minimum height	**100**	**mm**
Maximum height	**365**	**mm**
Total stroke	**265**	**mm**
Static height	**235**	**mm**
Effective area at static height	**350**	**cm²**
Bellows weight	**5,4**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

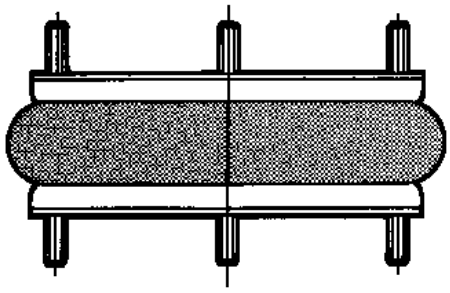
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

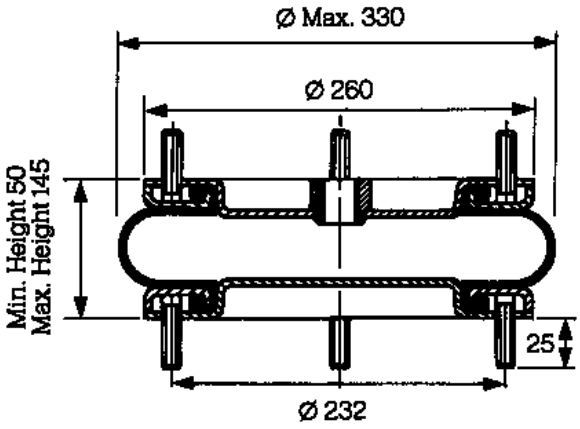
PNEURIDE®

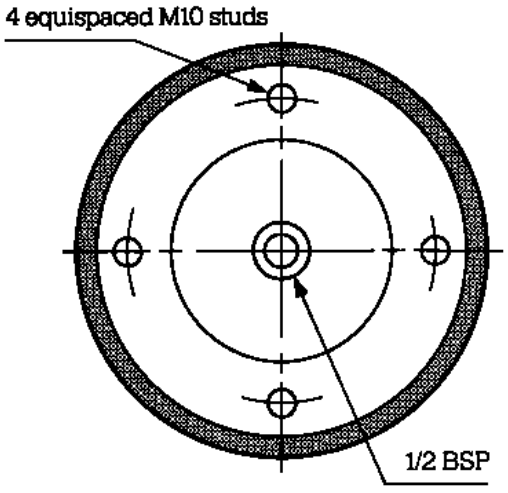
Bellows
12”x1

PNP 30407 02 00
A 3 1481 OB 22
PNP 30552 01 20

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	27 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

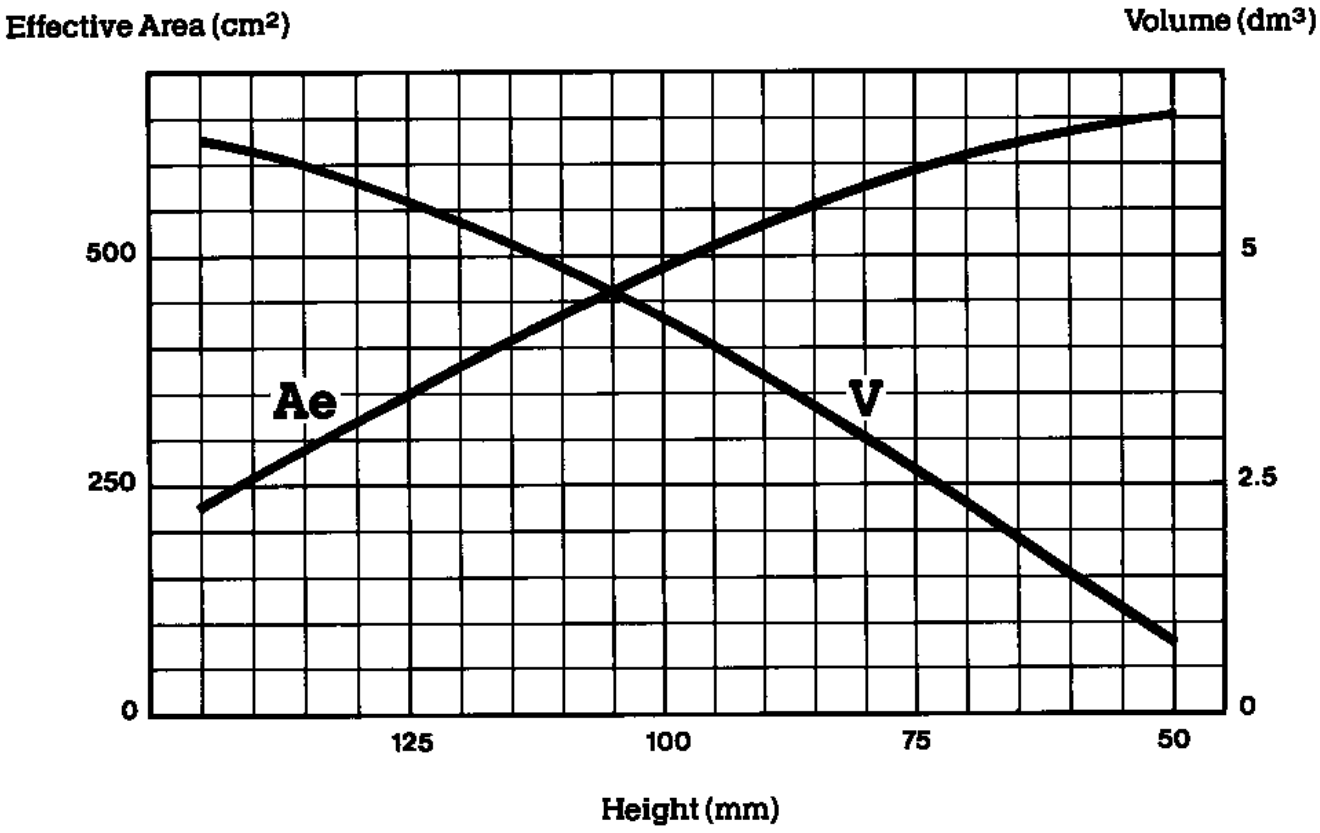
Maximum diameter	**330**	**mm**
Space required	**345**	**mm**
Minimum height	**50**	**mm**
Maximum height	**145**	**mm**
Total stroke	**95**	**mm**
Static height	**95**	**mm**
Effective area at static height	**510**	**cm²**
Bellows weight	**4,75**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

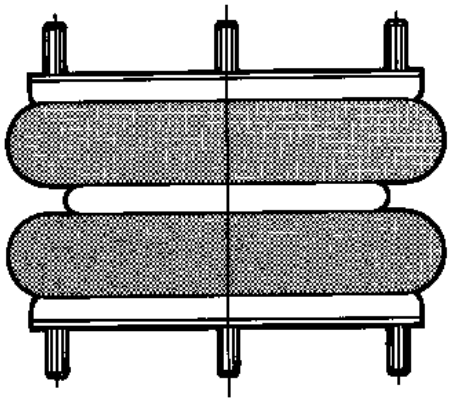
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

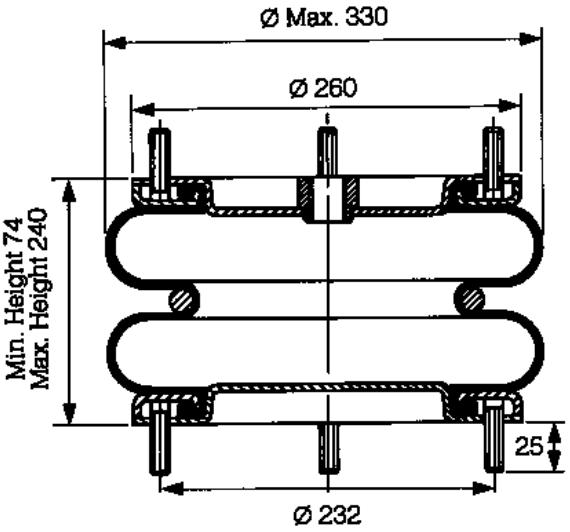
PNEURIDE®

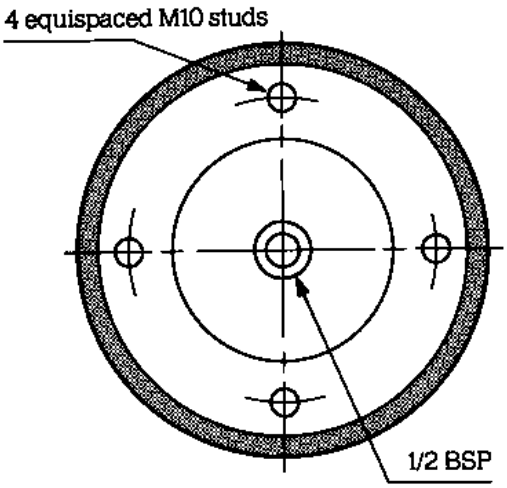
Bellows
12"x2

VSM 10178
A 3 1482 OB 23
PNP 30552 01 18

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	27 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

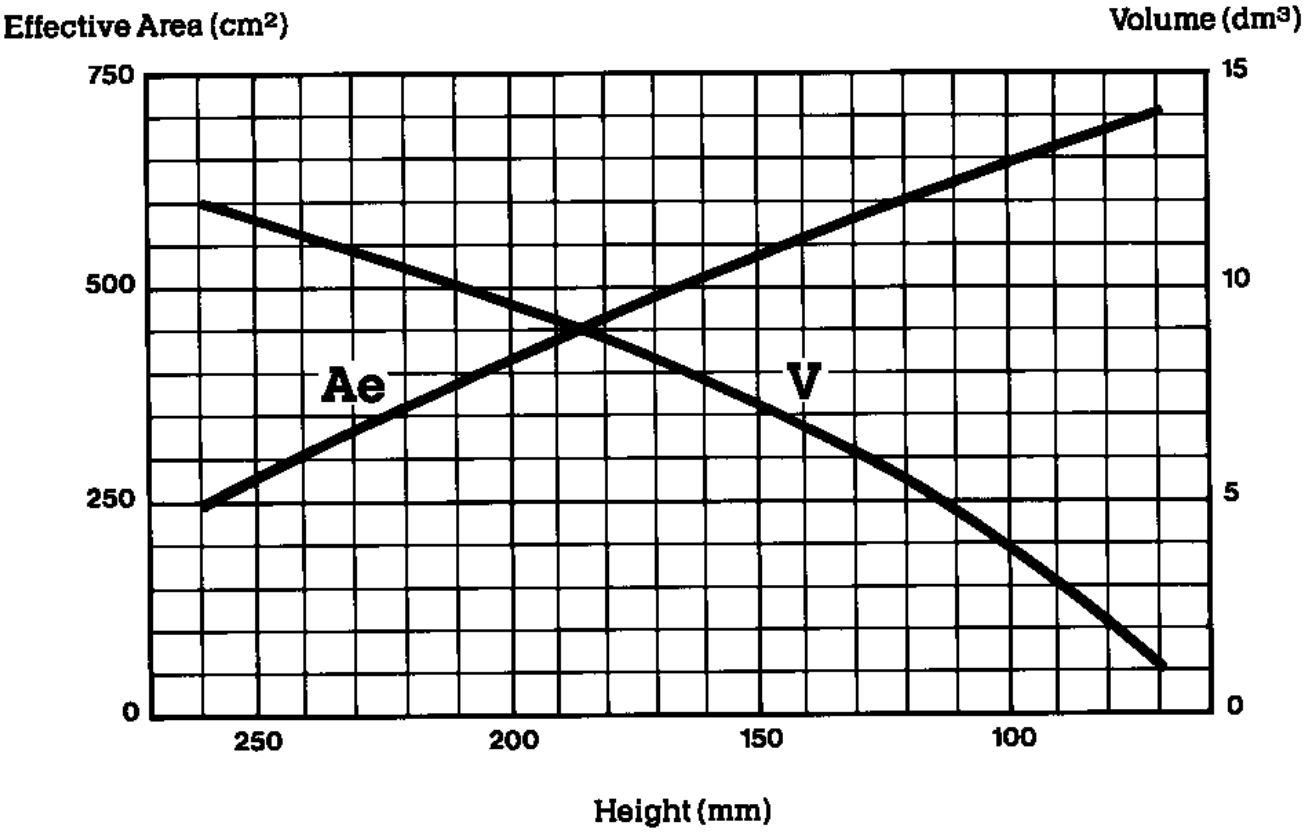
Dimensions

Maximum diameter	**330**	**mm**
Space required	**345**	**mm**
Minimum height	**74**	**mm**
Maximum height	**240**	**mm**
Total stroke	**166**	**mm**
Static height	**160**	**mm**
Effective area at static height	**510**	**cm²**
Bellows weight	**5,85**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

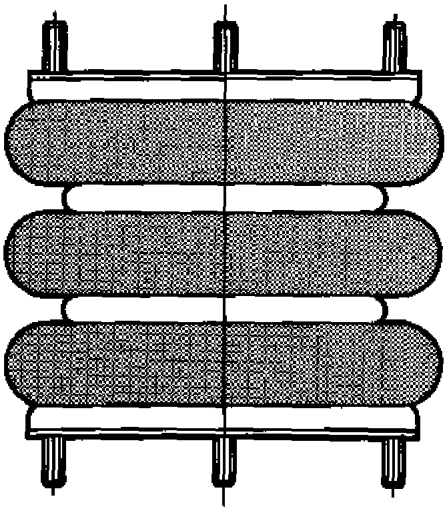
The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

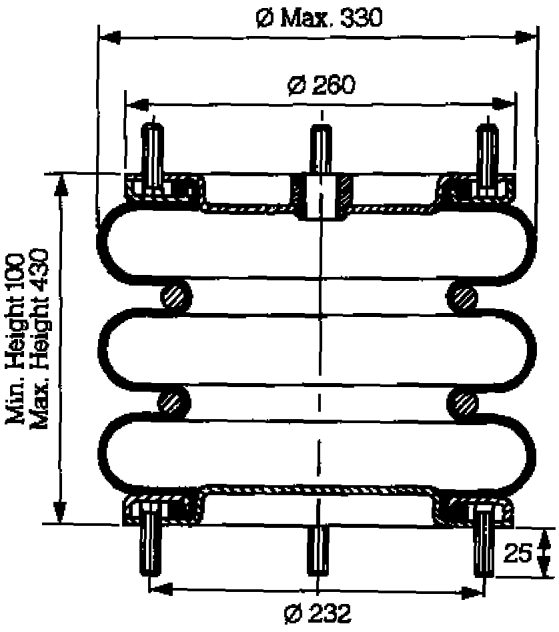
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

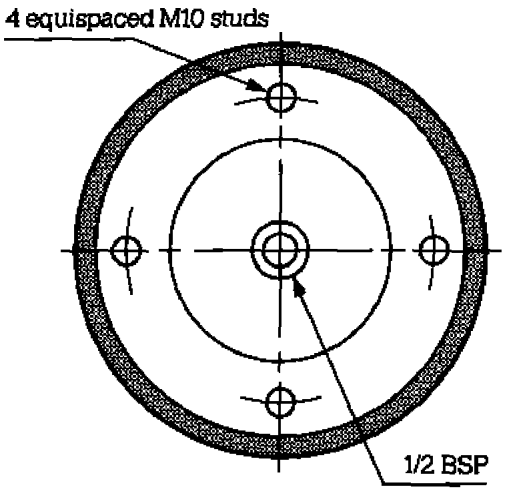
Bellows
12"x3

VSM 10132
PNP 30552 01 78

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	27 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

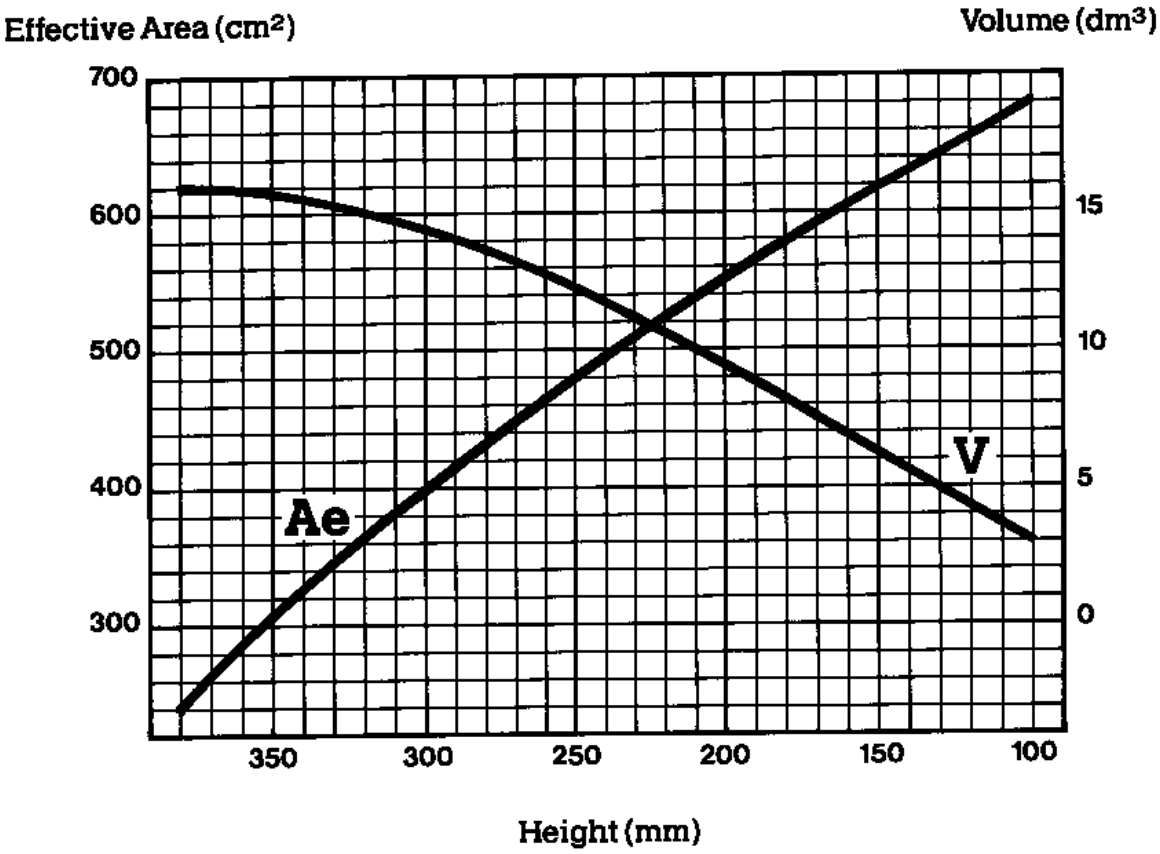
Dimensions

Maximum diameter	**330**	**mm**
Space required	**345**	**mm**
Minimum height	**115**	**mm**
Maximum height	**430**	**mm**
Total stroke	**330**	**mm**
Static height	**222**	**mm**
Effective area at static height	**510**	**cm²**
Bellows weight	**7**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

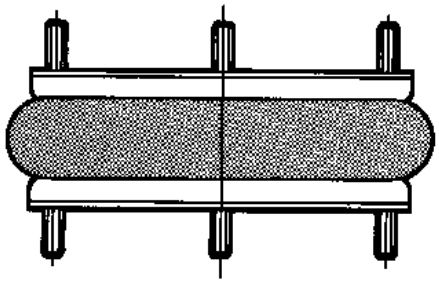
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

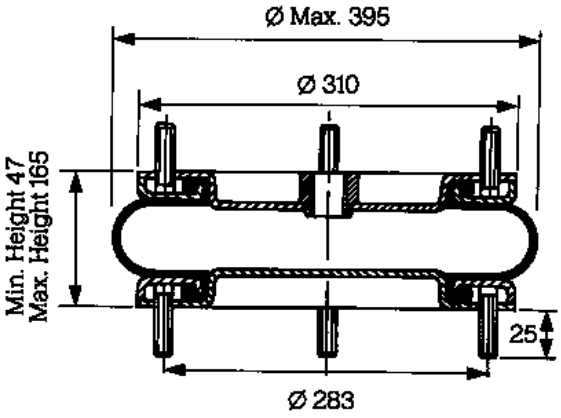
Bellows

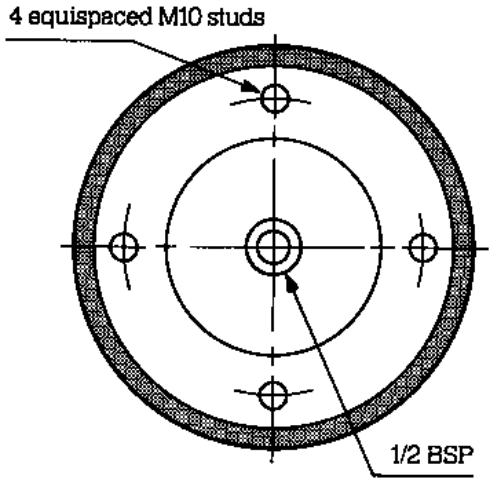
14½"x1

PNP 30408 02 00
A 3 1484 OB 25

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	26 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

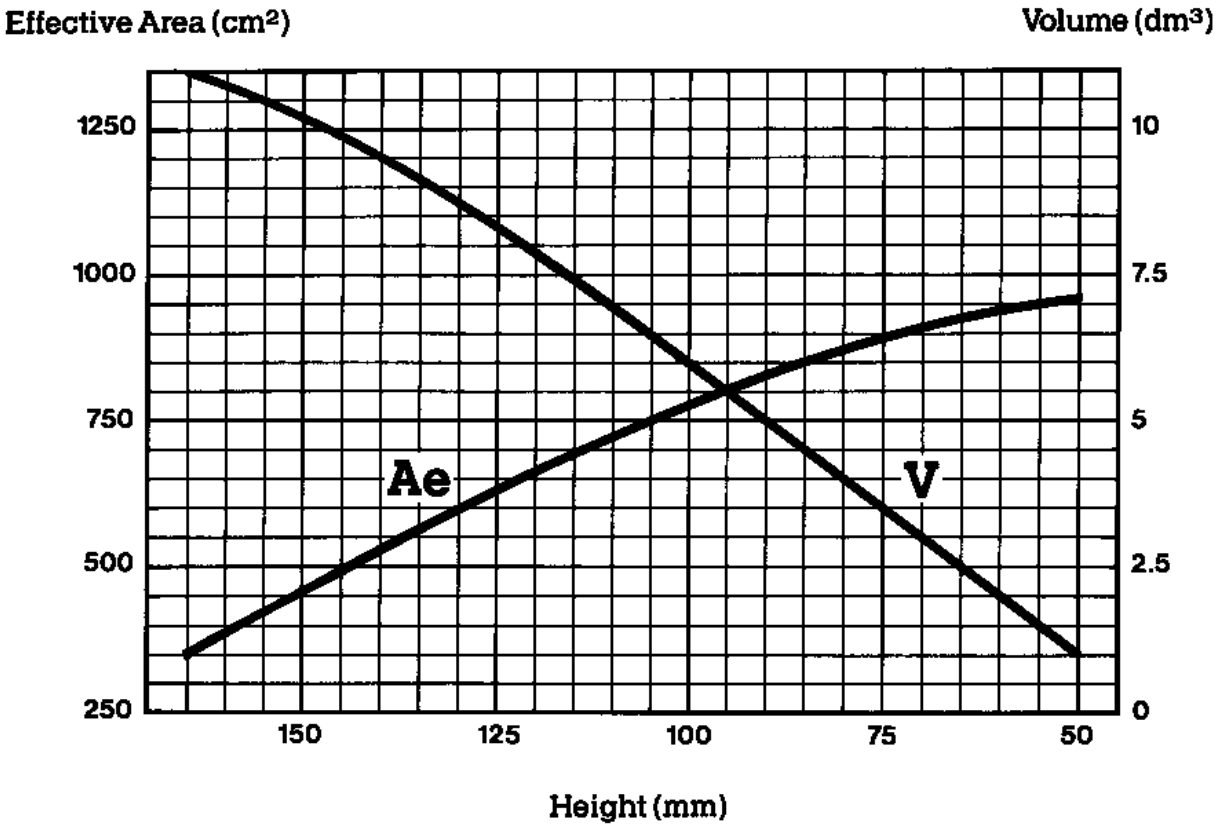
Maximum diameter	**395**	**mm**
Space required	**410**	**mm**
Minimum height	**47**	**mm**
Maximum height	**165**	**mm**
Total stroke	**118**	**mm**
Static height	**105**	**mm**
Effective area at static height	**750**	**cm²**
Bellows weight	**6,9**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

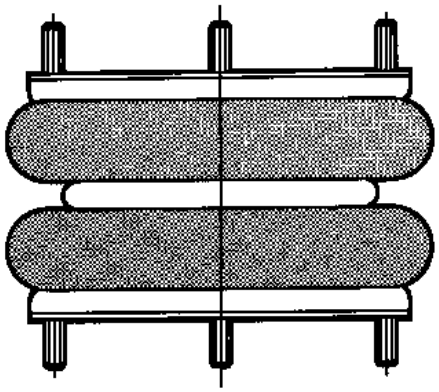
PNEURIDE®

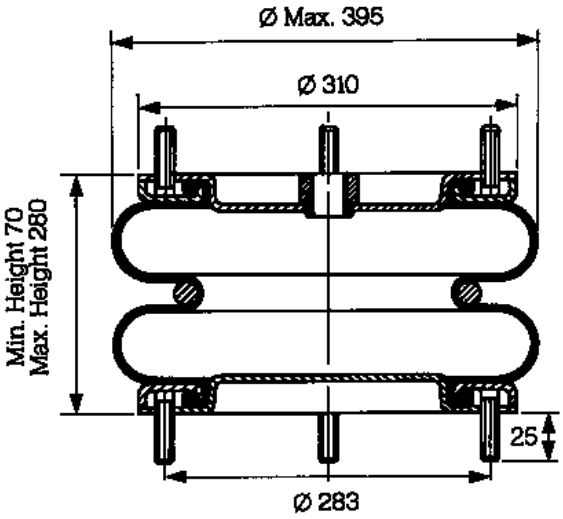
Bellows

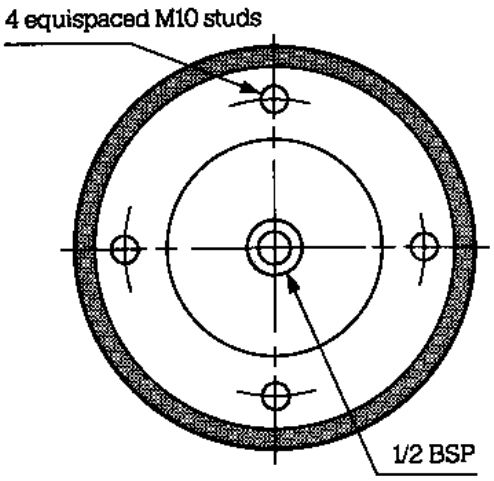
14½"x2

VSM 10248
PNP 30414 01 17

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	26 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

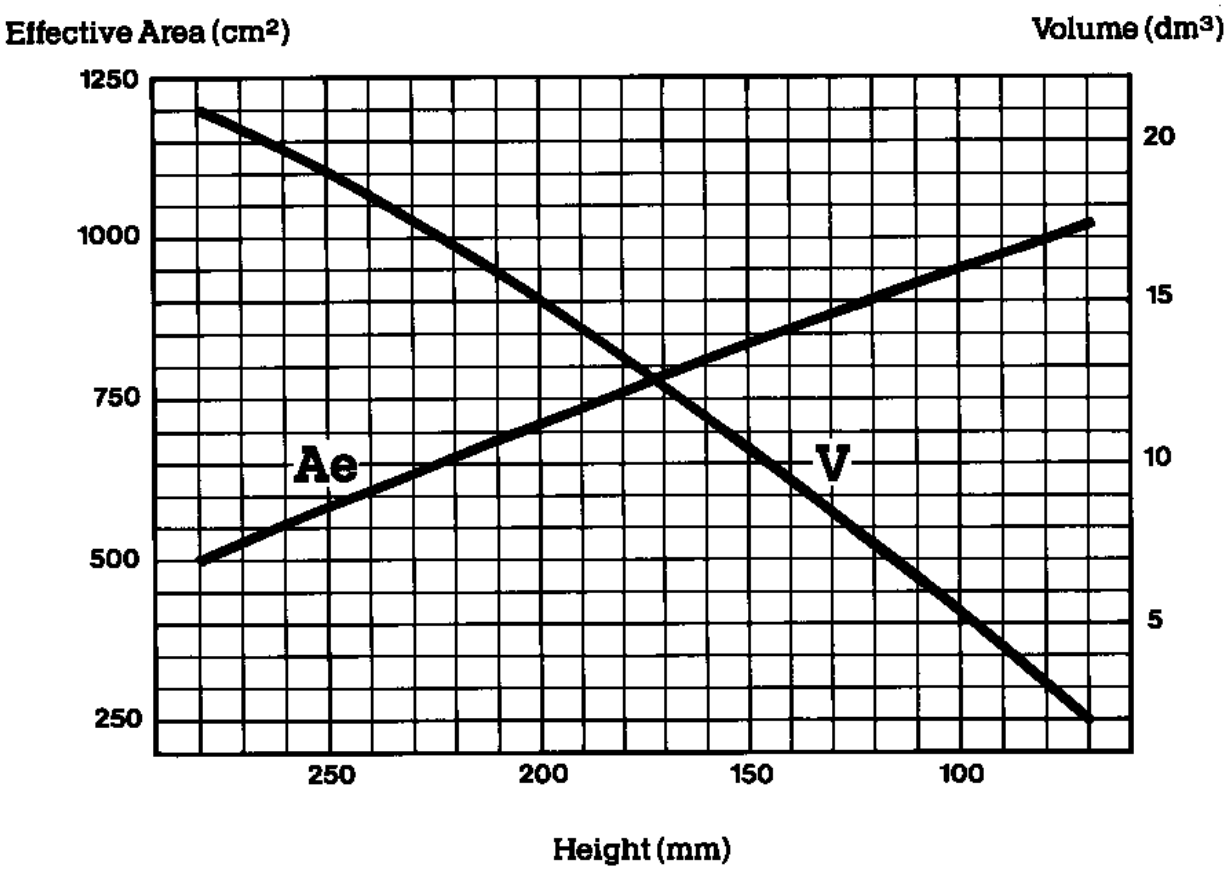
Dimensions

Maximum diameter	**395**	**mm**
Space required	**410**	**mm**
Minimum height	**70**	**mm**
Maximum height	**280**	**mm**
Total stroke	**210**	**mm**
Static height	**180**	**mm**
Effective area at static height	**760**	**cm²**
Bellows weight	**8,5**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

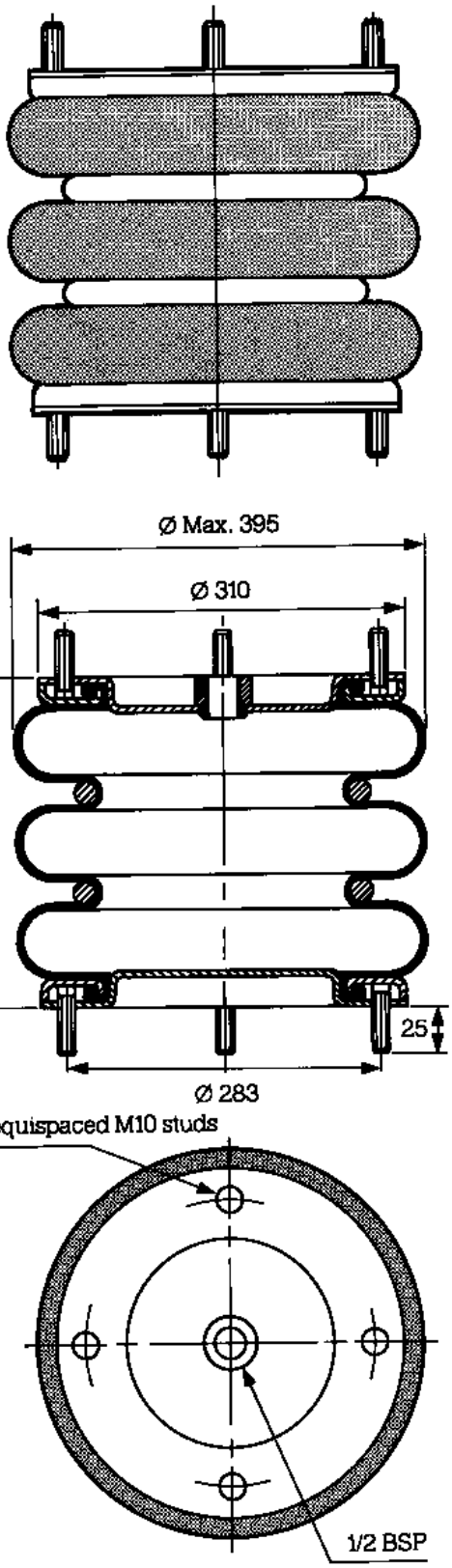
The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

Bellows

14½"x3

PNP 30625 01 23
PNP 30414 01 42

TRELLEBORG
AUTOMOTIVE



Conditions of use

Maximum working pressure	8 bar
Burst pressure	26 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

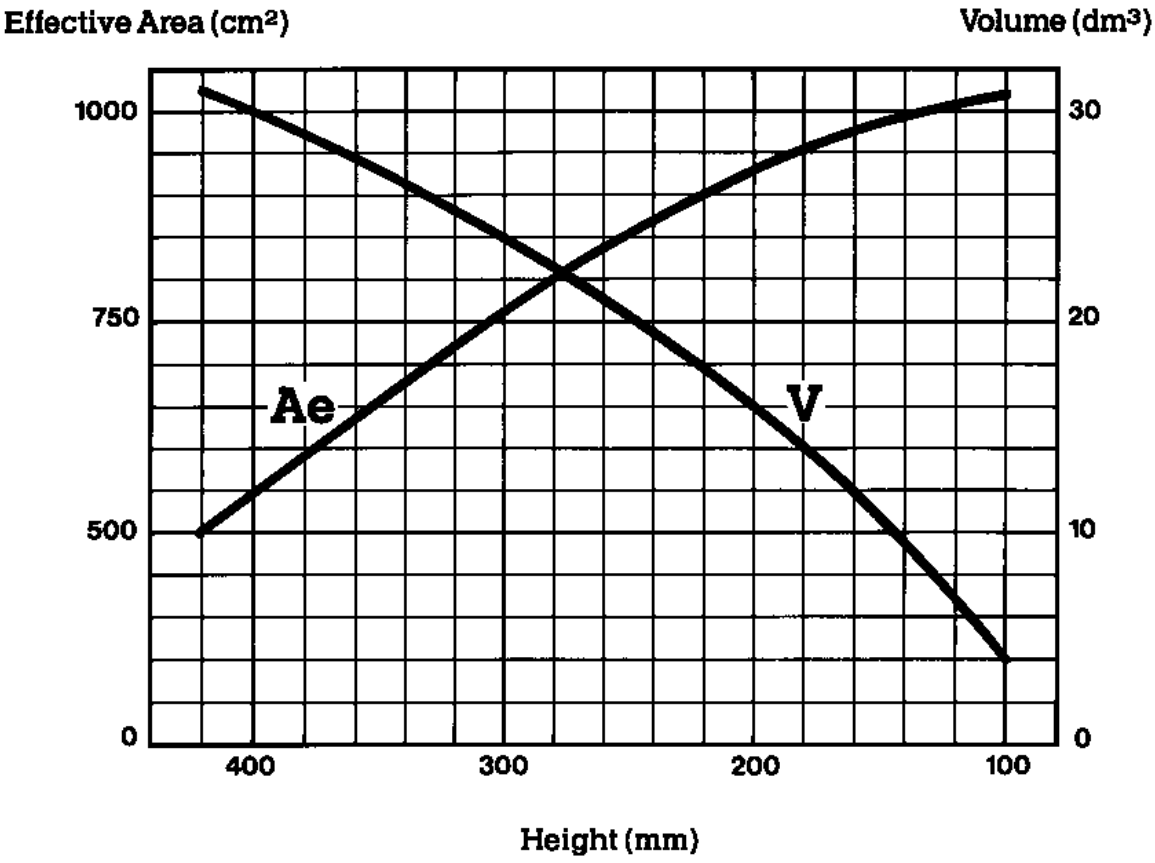
Maximum diameter	**395**	**mm**
Space required	**410**	**mm**
Minimum height	**100**	**mm**
Maximum height	**476**	**mm**
Total stroke	**376**	**mm**
Static height	**280**	**mm**
Effective area at static height	**800**	**cm²**
Bellows weight	**10**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

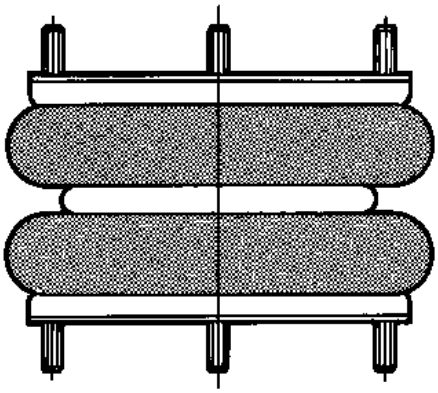
PNEURIDE®

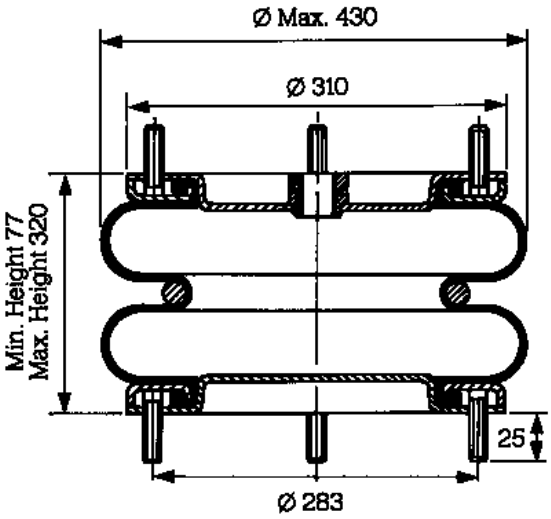
Bellows

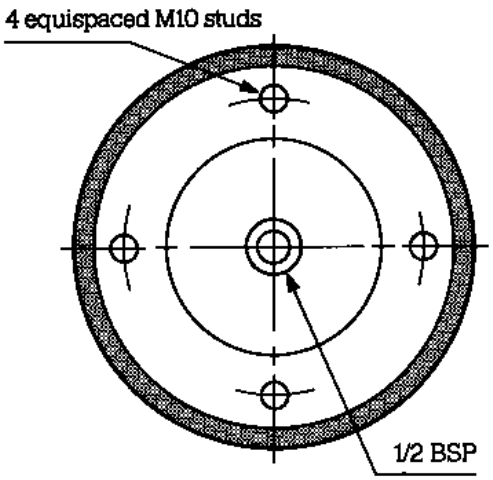
16"x2

ICM 3016
PNP 31316 01 00

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	25 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

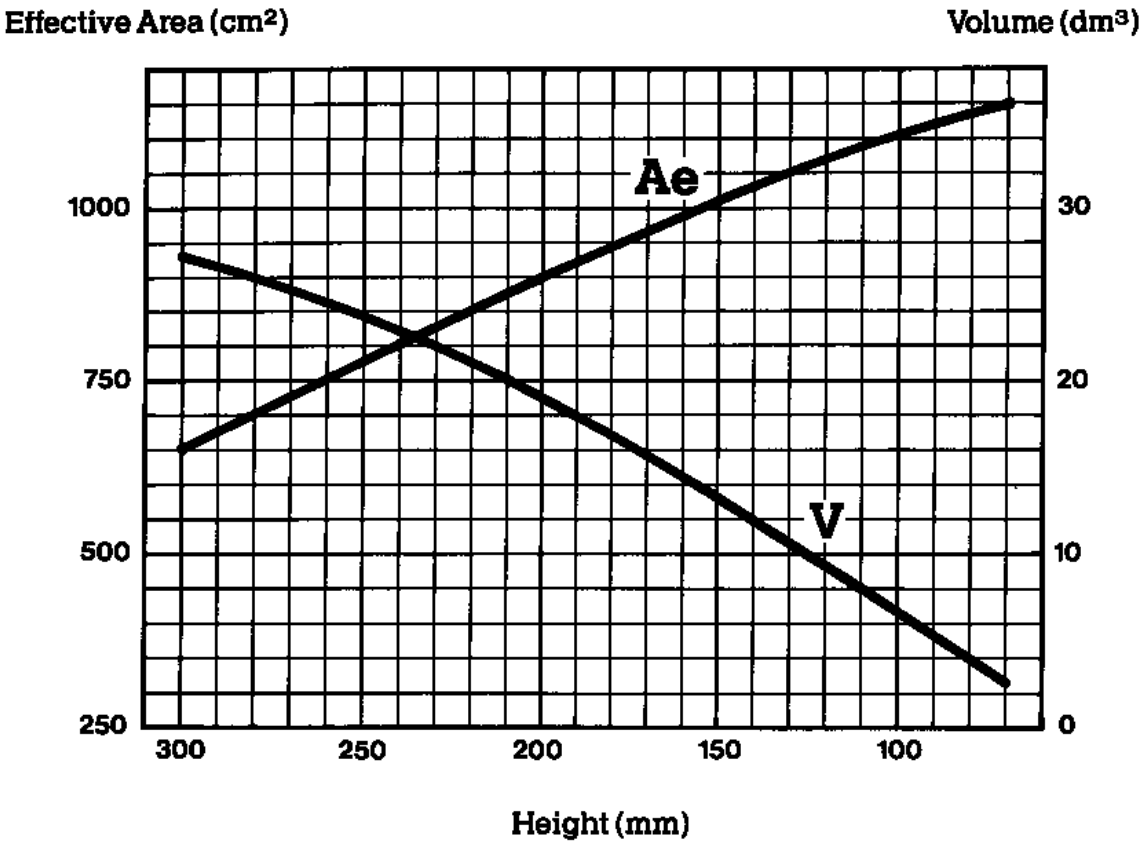
Maximum diameter	**430**	**mm**
Space required	**445**	**mm**
Minimum height	**77**	**mm**
Maximum height	**320**	**mm**
Total stroke	**243**	**mm**
Static height	**180**	**mm**
Effective area at static height	**950**	**cm²**
Bellows weight	**8,8**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

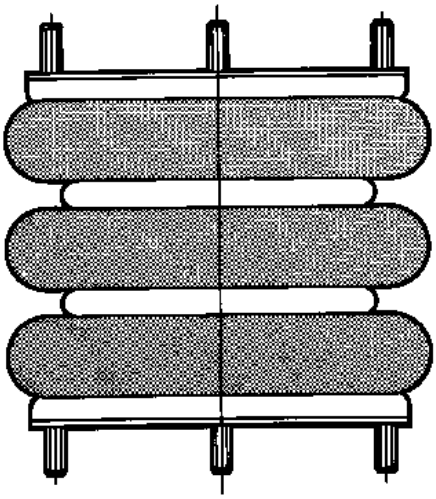
PNEURIDE®

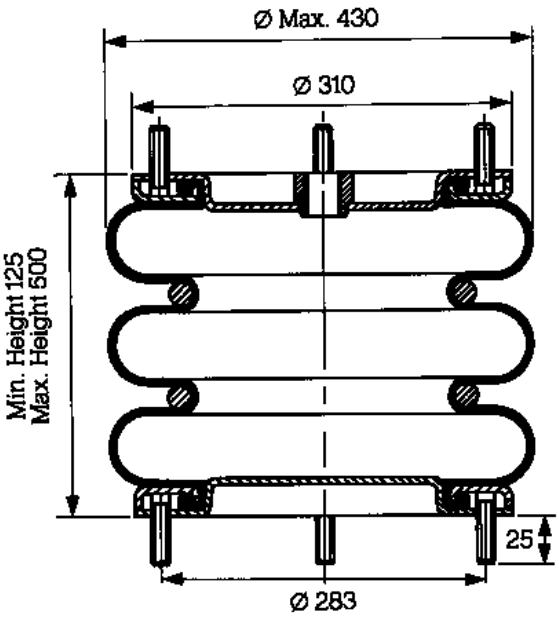
Bellows

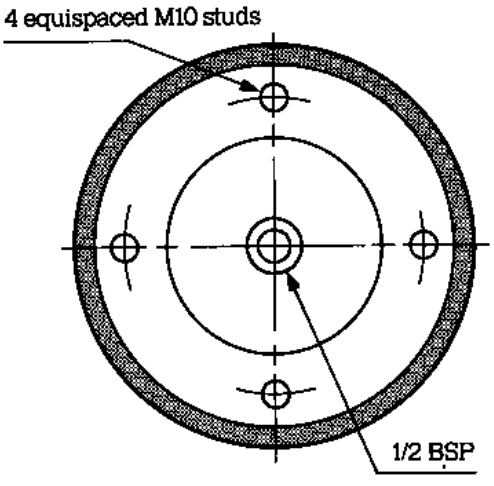
16"x3

PNP 31317 01 00
PNP 31316 01 00

TRELLEBORG
AUTOMOTIVE







Conditions of use

Maximum working pressure	8 bar
Burst pressure	25 bar
Maximum angle between top and bottom plates	15°
Maximum axial offset	10mm

Precautions to observe

Do not exceed stated stroke.

Do not inflate assembly when it is unrestricted.

Do not inflate beyond pressures stated without prior consultation with Trelleborg.

Respect maximum and minimum heights.

The bellows must be securely fixed.

Do not use without air pressure.

Operating temperature

Minimum temperature –30° (–40°C static)

Maximum temperature +70° (+90°C static)

Materials

- **Bellows**
  These are manufactured from various rubbers.
- **Metal parts**
  These are manufactured from mild steel and protected by zinc passivate and yellow chromate.

Note

This bellow assembly can be completely dismantled.

Dimensions

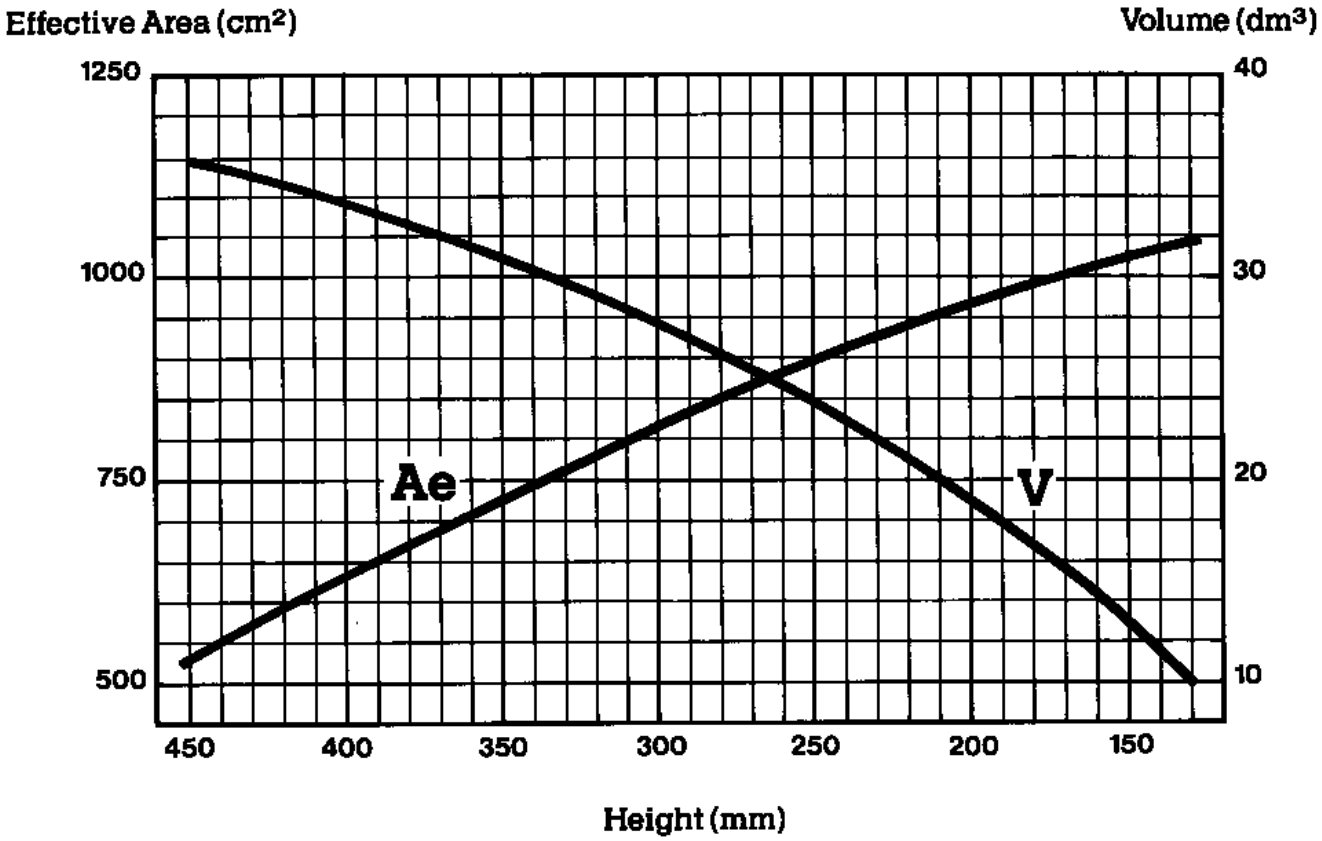
Maximum diameter	**430**	**mm**
Space required	**445**	**mm**
Minimum height	**125**	**mm**
Maximum height	**500**	**mm**
Total stroke	**375**	**mm**
Static height	**280**	**mm**
Effective area at static height	**850**	**cm²**
Bellows weight	**16**	**kg**

Warning
Please note improper use or over inflation may cause assembly to burst causing property damage or severe personal injury.

PNEURIDE®

TRELLEBORG
AUTOMOTIVE

Effective Area/Height
Volume/Height



Ae Effective Area cm²

V Volume dm³

The effective area curve values are measured at a pressure of 4 bar (0·4 MPa).

The values of the volume curve are measured at a pressure of 7 bar (0·7 MPa).

PNEURIDE®

Notes

Trelleborg Automotive together with ICI Polyurethanes have developed DALTEK – a lower cost, improved performance microcellular polyurethane material.

Using globally sourced raw materials ICI Polyurethanes and Trelleborg Automotive have formulated DALTEK offering excellent new opportunities.

DALTEK is a unique advanced formulation of an MDI based polyurethane giving highly advanced properties.

Innovation

QUALITY SOLUTIONS
FOR A GLOBAL MARKET

Ecologically sound – DALTEK is manufactured from the least harmful of the isocyanates and produced from fully recyclable materials.

DALTEK is liquid at 20°C considerably reducing preconditioning costs.

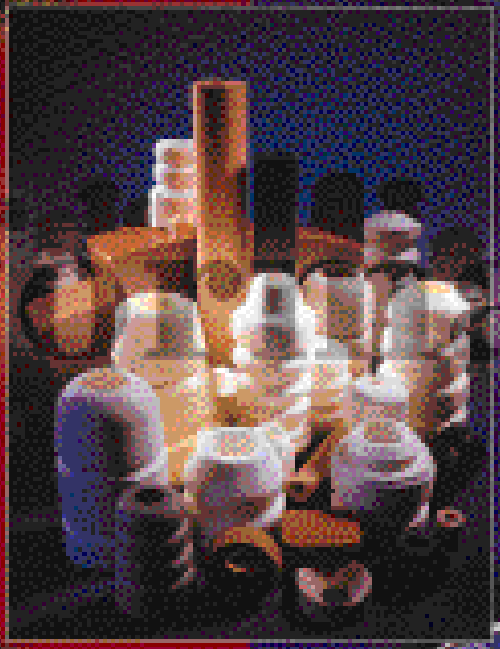
DALTEK is storage stable at 20°C for 6 months facilitating bulk delivery which results in less product variation.

One grade of polyol is capable of covering all applications.

DALTEK
MICROVON®

Current Applications:
Spring aids
Bump stops
Radiator mounts
Dust covers for steering joints
Isolation pads for the Electronics industry

Potential Applications:
Shock absorber mountings
Suspension spring isolation mountings
Anti roll bar bushes
Suspension control arm bushes
Engine antivibration mounts



Improved performance
reduced cost

Environmentally
friendly

Global supply and support

At the forefront of
technology research

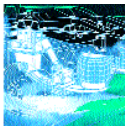
DALTEK
MICROVON

For further information contact:

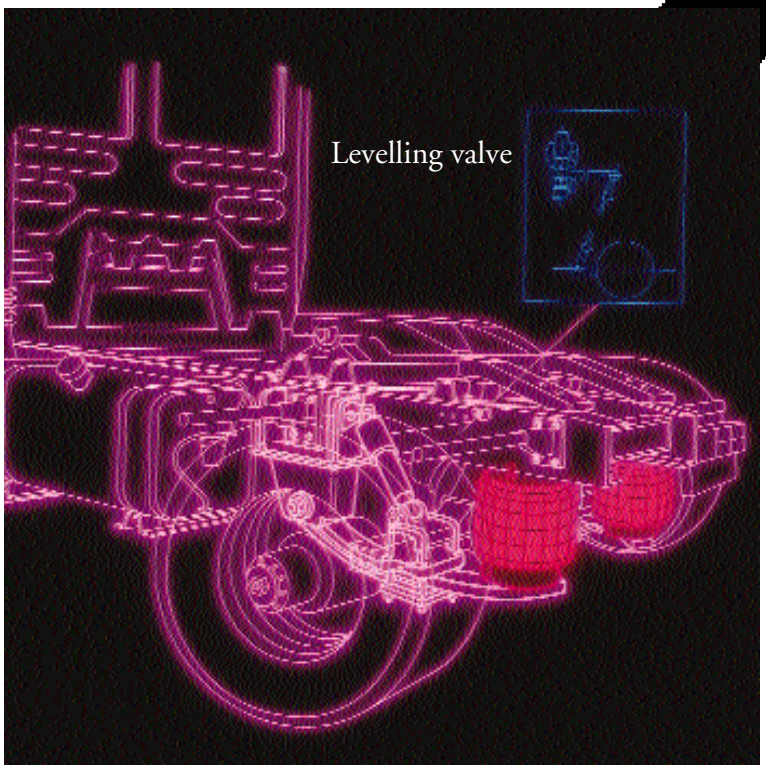
Holbrook Lane
Coventry
CV6 4QX
TEL:+44 (0)24 76293317
FAX +44 (0)24 76293385
E-mail:neil.marsons@trelleborg.com

PNEURIDE AIR SUSPENSION SYSTEMS FOR COMMERCIAL VEHICLES

TRELLE[illegible]G
AUTOMOTI[illegible]



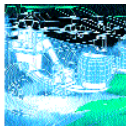
Trelleborg Pneuride[illegible] suspension systems and components are approved for fitment by most of the leading European vehicle manufacturers.



PNEURIDE®

UNIVERSA
ACCEPTE
SUSPEN

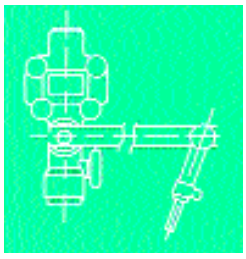
TRELLEBORG
AUTOMOTIVE



Trelleborg Pneuride air suspension systems and components are designed and manufactured to the highest technical standards developed over thirty years and proven over millions of miles throughout the world.

Development History

Trelleborg have manufactured air suspension bellows and diaphragms for well over thirty years. The early units were applied as spring aids. Since levelling systems had not been developed, Trelleborg set out to produce suitable valves then went on to develop systems capabilities to produce rubber components. And today, Trelleborg offer a fully comprehensive package of air suspensions.



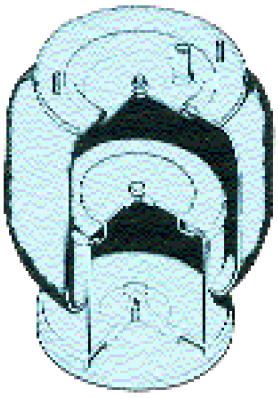
Applications

Trelleborg Pneuride air suspension systems and components are available for a wide variety of trucks, trailers and coaches.

Range

The Pneuride range includes:

- 24 sizes of air suspension bellows from 41/2" x 2 up to 26" x 2 for automotive and industrial use.
- More than 20 sizes of air suspension diaphragm from 6" to 14" diameter.
- Several sizes of crimped bead airspring.
- A range of levelling systems for all applications.



Design Service

We offer a comprehensive design service with the flexibility to suit your specific requirement. Whether you need a complete air suspension package for your vehicle or simply tune an airspring for your application our expert staff will be pleased to offer assistance.

PNEURIDE®

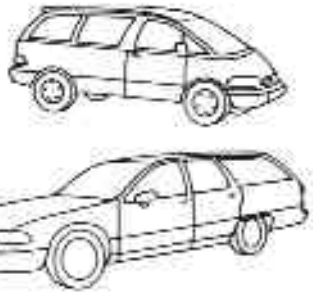
For further information contact:

TRELLEBORG
AUTOMOTIVE

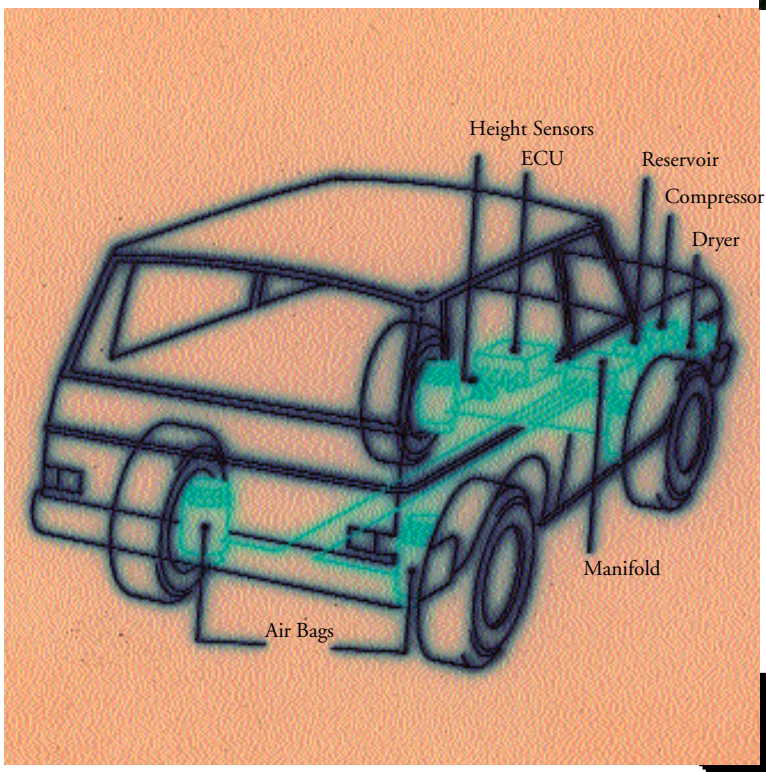
Holbrook Lane
Coventry
CV6 4QX
TEL:+44 (0)24 76293317
FAX +44 (0)24 76293385
E-mail:neil.marsons@trelleborg.com

ECAS™ ELECTRONICALLY CONTROLLED AIR SUSPENSION

TRELLEBORG
AUTOMOTIVE



The ECAS™ electronically controlled air suspension offers a whole new standard of ride quality for a wide range of automotive applications, including 4 x 4 off road passenger vehicles and multi-purpose vehicles.



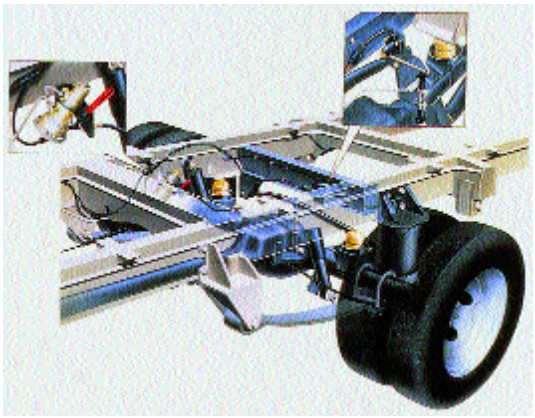
ECAS™

STATE OF THE ART SUSPENSION

TRELLEBORG
AUTOMOTIVE

ECAS™ is an electronically controlled air suspension package which provides a new standard of suspension performance beyond the capability of any conventional system.
It maintains a constant ride height, offers superior ride quality and significantly reduces peak shock load to the chassis.

Development History
The ECAS™ suspension was developed by Trelleborg Automotive to take full advantage of the versatile nature of air suspension and apply it to small vehicals. The programme has been running for six years and has been fully tested at high altitude in winter and high temperatures in summer.
Extensive vehicle testing has resulted in the development of a highly reliable system suitable for the most demanding applications.



Features & Advantages
Superior Ride Quality

Air springs rovide unrivalled ride comfort under all load conditions and reduce peak shock loads to chassis by up to 75%. Computer control maintains constant height under varying load conditions- avoiding need for headlamp levelling system.

Variable height control

- Lower for easy access and luggage loading.
- Lower height at speed for improved handling and fuel economy.
- Easily adjustable for deck levelling and trailer hitching.
- Higher for better ground clearance off-road.

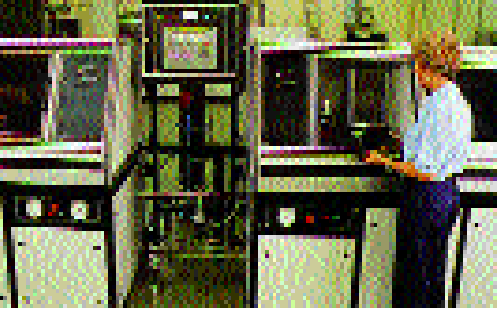
Specifications
The ECAS™ suspension package comprises: Air springs, Height Sensors, Electronic Control Unit, 12vDC Compressor, Air Dryer, Air Reservoir and Air Distribution Valve Block.

E AS™

For further

TRELLE
AUTOMOTI

Holbrook Lane
Coventry
CV6 4QX
TEL:+44 (0)24 7629
FAX +44 (0)24 7629
E-mail:neil.marsons@



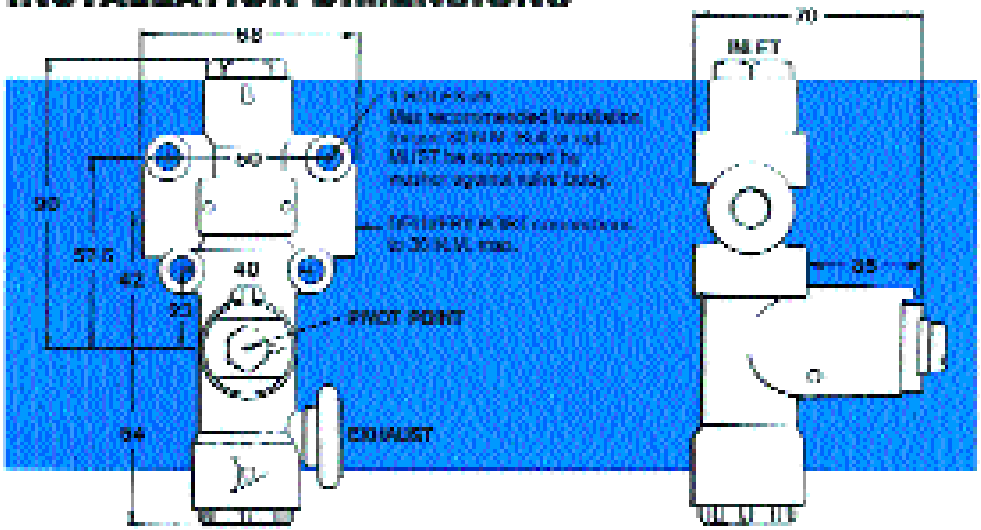
TRELLEBORG
AUTOMOTIVE

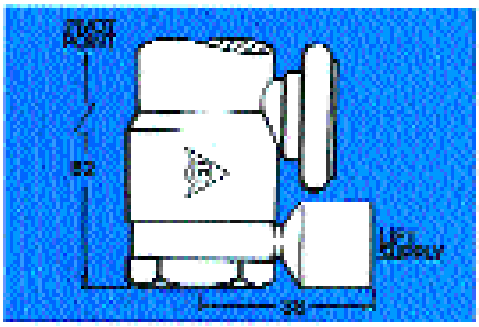
Levelling Valves

PNEURIDE®

MKII NO-DELAY LEVELLING VALVE With Ferry Lift Option

INSTALLATION DIMENSIONS

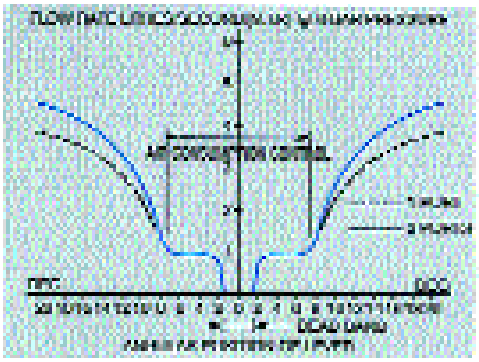


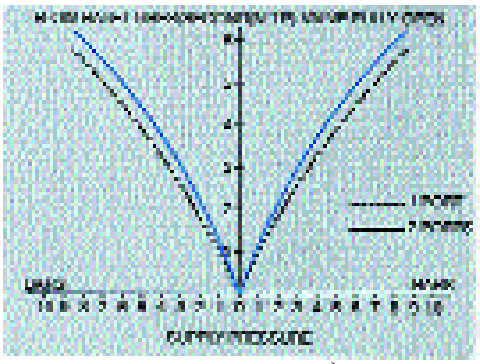


Levelling valves are used to control the inletting and exhausting of air to and from airspring assemblies in order to achieve a constant platform height under all vehicle load conditions, whilst maintaining a near constant air spring bounce frequency.

Ferry Lift Option

TECHNICAL DATA





Air Supply: 10 bar max.
Dead Band Angle: (LAP) ± 1.5°C
Operating Temperatures: -40°C, +80°C.
Lever Rotation: 360°.
Lift Supply: 5 bar in.
Ferry lift: 60mm lift on a on a 180mm length lever.

Lever: Can be supplied by PNEURIDE®
Low air consumption characteristics.
Reduced flow between delivery ports to aid roll control.
Through chassis mounting capability.
Port Thread M12 x 1.5 - 14mm deep with filter protection.

Why PNEURIDE® Levelling Valves?

- Made in Britain
- Easy to fit
- Constant ride height
- Versatility
- Corrosion resistant
- Lightweight plastic body

For further information contact:

TRELLEBORG AUTOMOTIVE
Holbrook Lane
Coventry
CV6 4QX
TEL:+44 (0)24 76293317
FAX +44 (0)24 76293385
E-mail:neil.marsons@trelleborg.com

Futher Information can be obtained by contacting the following

Sales

Paul Brown – Sales and Programme Manager
Tel: + 44 (0) 24 76 29 3409
Fax: + 44 (0) 24 76 29 3385

Wayne Copeland – Sales Executive
Tel: + 44 (0) 24 76 29 3497
Fax: + 44 (0) 24 76 29 3385

Jaspal Gill – Sales Executive
Tel: + 44 (0) 24 76 29 3320
Fax: + 44 (0) 24 76 29 3385

Or write to

Trelleborg Automotive AVS S & C
Holbrook Lane
Holbrooks
Coventry
CV6 4FX

www.trelleborg.com/coventry
mailto:coventry.sales@trelleborg.com