

Air Spring Isolators

Performance & Selection Data Manual

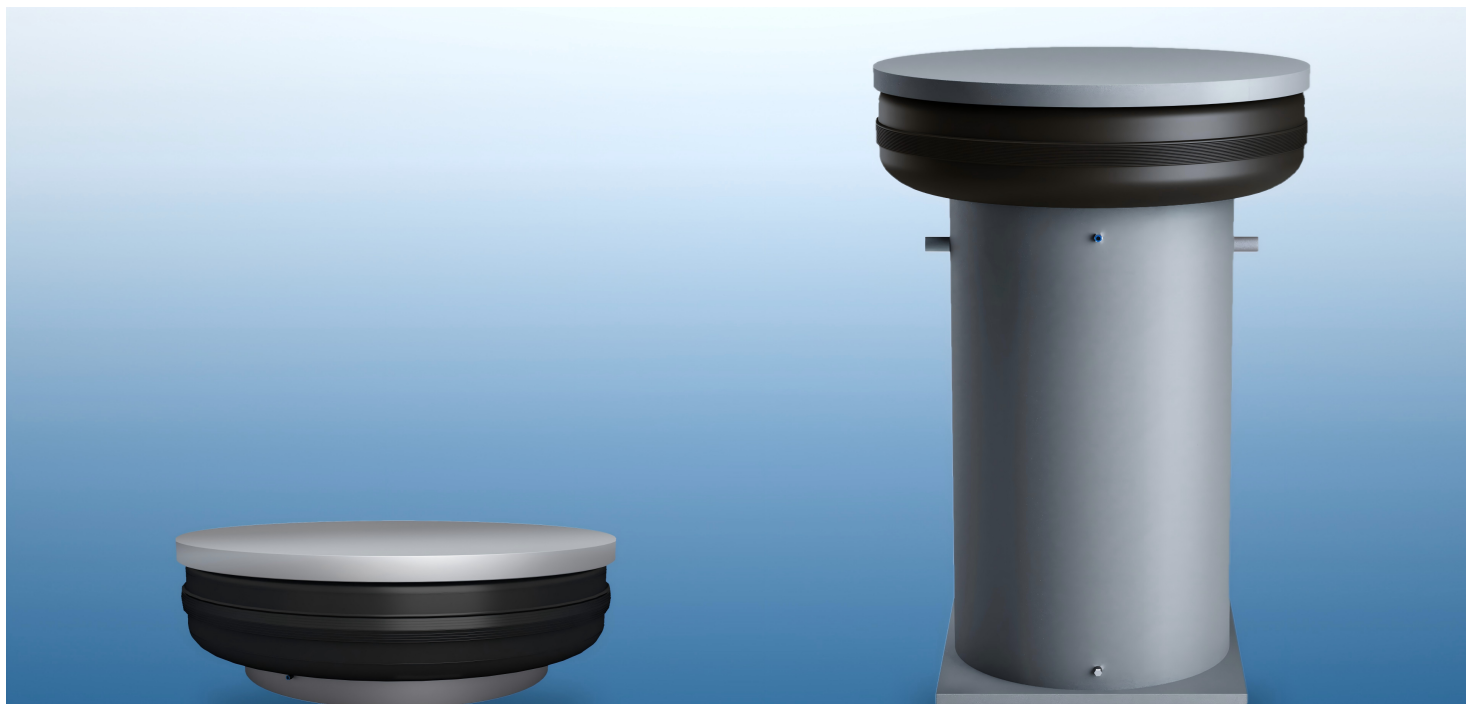
Air Isolation for Automotive Test Benches

Model Screening | Working Points | Curves | System Configuration

Air Spring Isolator Performance & Selection Data Manual

APS / ABS / GBS

23 controlled models



AIR SPRING ISOLATION SYSTEMS

AUTOMOTIVE TEST BENCH APPLICATIONS

Controlled APS, ABS and GBS performance data for model screening, working-point reading and system configuration.

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Data status Controlled

01 / MANUAL CONTROL

Manual Scope and Document Control

For series selection, model screening, data reading and rated working-point confirmation.

Purpose

This manual covers air-isolation applications for automotive test benches, strong floors, reaction masses and heavy-duty test foundations. It provides APS, ABS and GBS product structures, principal dimensions, rated working points, support force, vertical dynamic stiffness, vertical natural frequency and characteristic curves.

Use the data for series selection, point-load matching, working-pressure determination, model screening and working-point confirmation, and as the product-level basis for multi-point support, pneumatic levelling, auxiliary chambers and piping.

The manual does not replace support-reaction calculations, mechanical-stop verification, installation drawings or project specifications. Project documents govern system layout, motion limits and special conditions.

Document control

Document title

Air Spring Isolator Performance & Selection Data Manual

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AISTECH

Xinshu Vibration Control Technology (Shanghai) Co., Ltd. supplies air-isolation products, system configuration and engineering support for automotive laboratories and test benches. This controlled-data manual does not replace project calculations, installation drawings or specifications.

02 / CONTENTS

Contents, Model Index, Symbols and Units

Central index of sections, model pages, symbols and units. Links are active in the digital edition.

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Symbols and units

H	Working height	mm
P	Working pressure	bar
F	Support force	kN
Kz	Vertical dynamic stiffness	N/cm
fn	Vertical natural frequency	Hz

Model index

APS Series

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GBS510-300	29
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03 / DATA RULES

Data Definitions and Reading Rules

Pressure, working height, support force and dynamic performance shall be read at the same point and boundaries.

Rated working height

The reference height for model data; it is neither a mechanical limit nor allowable travel.

Curve-data height range

The curve-data range is not the permissible mechanical travel.

Support force

Support force at the stated pressure and height; it is not the ultimate load.

Vertical dynamic stiffness

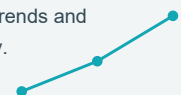
A dynamic value at the stated point and test condition; do not use it as static deflection stiffness.

Vertical natural frequency

Read this dynamic value together with the corresponding force, pressure, height and boundary conditions.

Characteristic curve

Markers are data points. Lines indicate trends and interpolation, not strict full-range linearity.



Mandatory reading rule

Read data only within the plotted pressure, height and force ranges. Do not extrapolate linearly or proportionally.

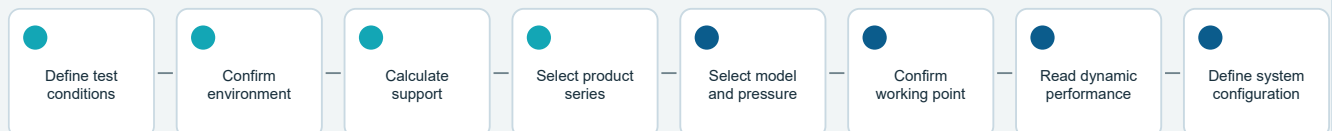
04 / SERIES SELECTION

Product Series Selection Logic

Select the series from test type, environment, motion and dynamics, then match reaction, height and pressure.

APS	ABS	GBS
Environmental resistance and stability	Large stroke and dynamic loading	Multi-axis loading and heavy-duty support
Key features Cast-aluminium body, stable support and inherent damping	Key features Large height variation and dynamic travel	Key features Strap restraint, multi-axis flexibility and high load
Operating conditions Moisture, oil, alignment and low induced noise	Operating conditions Cyclic load, moderate shock and large travel	Operating conditions Vertical, lateral and multi-axis motion
Typical test benches Engine, powertrain and NVH	Typical test benches Fatigue, durability and dynamic test benches	Typical test benches Four-post, road simulation and reaction masses
System options Levelling and status control	System options Auxiliary air chamber and restrictor circuit	System options Auxiliary chambers and multi-axis support

Engineering Selection Process



Full-Range Quick Selection Table I

All APS models and ABS165-ABS385, screened by rated height, pressure, support force and natural frequency.

Series	Model	Rated working height [mm]	Working pressure [bar]	Support force [kN]	Vertical natural frequency [Hz]	Application	Page
APS	APS165	158	3-6	3.52-7.46	2.35-2.58	Engine / Powertrain / NVH	09
APS	APS200	158	3-6	6.11-10	2.33-2.56	Engine / Powertrain / NVH	10
APS	APS280	158	3-6	11.58-24.4	2.18-2.51	Engine / Powertrain / NVH	11
APS	APS320	158	3-6	15.76-33.49	2.15-2.47	Engine / Powertrain / NVH	12
APS	APS380	158	3-6	24.77-49.94	2.10-2.49	Engine / Powertrain / NVH	13
APS	APS530	158	3-6	51.43-102.33	2.08-2.48	Engine / Powertrain / NVH	14
APS	APS640	158	3-6	74.06-147.76	2.06-2.50	Engine / Powertrain / NVH	15
APS	APS800	158	3-6	111.44-222.78	2.04-2.51	Engine / Powertrain / NVH	16
ABS	ABS165	115	3-7	2.7-6.6	2.80-3.10	Fatigue / Durability / Dynamic	18
ABS	ABS215	135	3-7	3.9-9.6	2.60-2.90	Fatigue / Durability / Dynamic	19
ABS	ABS250	135	3-7	5.5-14	2.60-2.60	Fatigue / Durability / Dynamic	20
ABS	ABS325	155	3-7	10.7-25.4	2.30-2.50	Fatigue / Durability / Dynamic	21
ABS	ABS385	175	3-7	15.2-36.9	2.30-2.60	Fatigue / Durability / Dynamic	22

Controlled ranges at rated working height for model screening only. Read the final point on the model page.

Support force, dynamic stiffness and natural frequency vary with pressure and height; do not extrapolate.

Full-Range Quick Selection Table II

ABS440-ABS950 and all GBS models for medium/high loads, dynamic loading and heavy-duty systems.

Series	Model	Rated working height [mm]	Working pressure [bar]	Support force [kN]	Vertical natural frequency [Hz]	Application	Page
ABS	ABS440	175	3-7	28.7-68.4	2.20-2.30	Fatigue / Durability / Dynamic	23
ABS	ABS530	175	3-7	38.9-92.5	2.20-2.30	Fatigue / Durability / Dynamic	24
ABS	ABS580	175	3-7	53.6-126.7	2.10-2.30	Fatigue / Durability / Dynamic	25
ABS	ABS715	200	3-7	88.7-202.1	1.90-2.00	Fatigue / Durability / Dynamic	26
ABS	ABS950	200	3-7	162-383	1.90-2.00	Fatigue / Durability / Dynamic	27
GBS	GBS510-300	300	4-8	52-104	1.50-1.70	Road Simulation / Heavy Foundation	29
GBS	GBS610-300	300	4-8	83-165	1.30-1.50	Road Simulation / Heavy Foundation	30
GBS	GBS720-300	300	4-8	122-244	1.30-1.40	Road Simulation / Heavy Foundation	31
GBS	GBS845-300	300	4-8	165-329	1.40-1.50	Road Simulation / Heavy Foundation	32
GBS	GBS845-1200	1200	4-8	165-329	0.81-0.89	Road Simulation / Heavy Foundation	33

Controlled ranges at rated working height for model screening only. Read the final point on the model page.

Support force, dynamic stiffness and natural frequency vary with pressure and height; do not extrapolate.

APS / SERIES OVERVIEW

APS Series | Precision Air Isolation

APS diaphragm air isolators use a die-cast aluminium body for automotive test environments exposed to pit moisture and oil splash. Their compact, stable structure and inherent damping help maintain equipment attitude and shaft alignment while reducing structural vibration and induced noise.

Applications include engine and powertrain test benches, precision dynamometer systems and NVH benches requiring low noise, alignment accuracy and repeatable data.



Model	Rated working height [mm]	Working pressure [bar]	Support force [kN]	Vertical natural frequency [Hz]	Page
APS165	158	3-6	3.52-7.46	2.35-2.58	09
APS200	158	3-6	6.11-10	2.33-2.56	10
APS280	158	3-6	11.58-24.4	2.18-2.51	11
APS320	158	3-6	15.76-33.49	2.15-2.47	12
APS380	158	3-6	24.77-49.94	2.10-2.49	13
APS530	158	3-6	51.43-102.33	2.08-2.48	14
APS640	158	3-6	74.06-147.76	2.06-2.50	15
APS800	158	3-6	111.44-222.78	2.04-2.51	16

- Wet and oily environments
- Stable alignment
- Low induced noise
- Engine and NVH

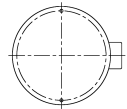
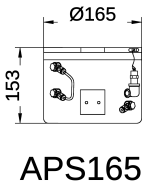
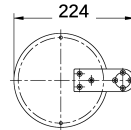
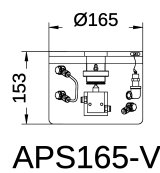
Product View



Low-profile diaphragm structure for precision isolation

Dimensions

Unit: mm



Basic Specifications

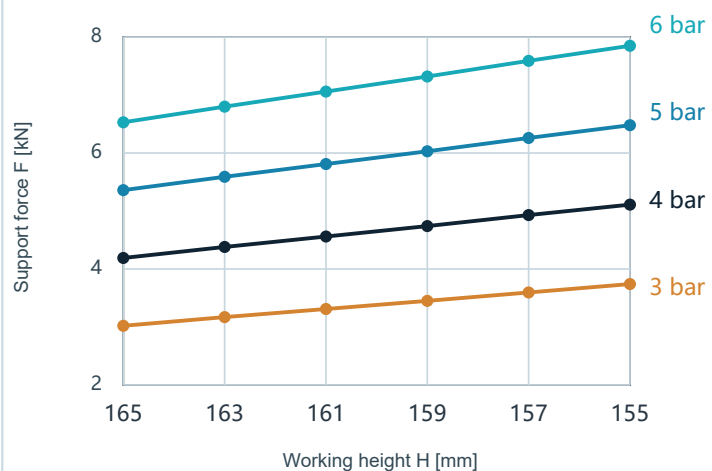
Model	APS165
Product weight	4.6 kg
Rated working height	158 mm
Operating temperature	-20 ~ +50°C
Structural damping ratio	0.1-0.2

Isolation Performance Data

Dynamic data at rated height: 158 mm

Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	3.52	717	2.58
4	4.83	915	2.50
5	6.14	1113	2.42
6	7.46	1310	2.35

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

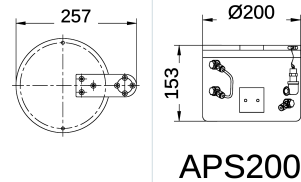
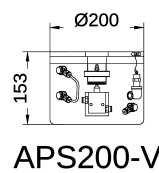
Product View



Low-profile diaphragm structure for precision isolation

Dimensions

Unit: mm



Basic Specifications

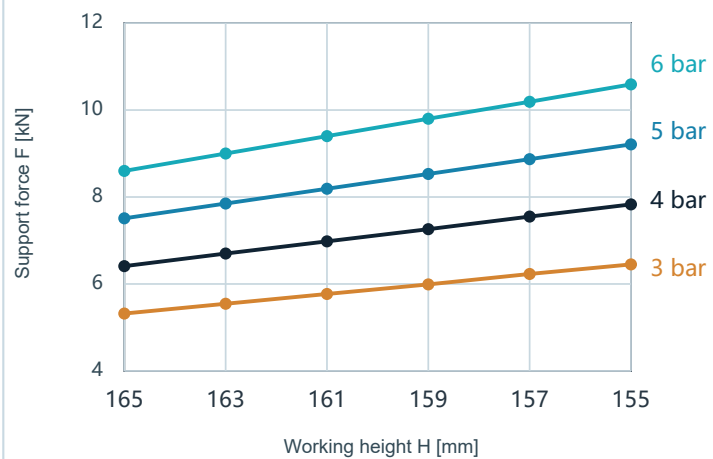
Model	APS200
Product weight	8.5 kg
Rated working height	158 mm
Operating temperature	-20 ~ +50°C
Structural damping ratio	0.1-0.2

Isolation Performance Data

Dynamic data at rated height: 158 mm

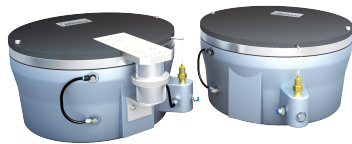
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	6.11	1123	2.56
4	7.40	1413	2.48
5	8.70	1703	2.40
6	10.00	1995	2.33

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

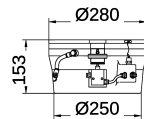
Product View



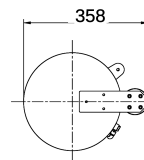
Low-profile diaphragm structure for precision isolation

Dimensions

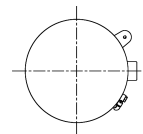
Unit: mm



APS280-V



APS280



Basic Specifications

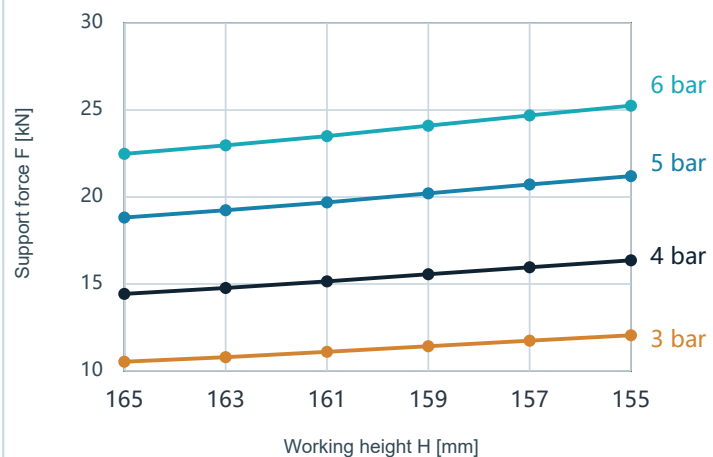
Model	APS280
Product weight	12.5 kg
Rated working height	158 mm
Operating temperature	-20 ~ +50°C
Structural damping ratio	0.1-0.2

Isolation Performance Data

Dynamic data at rated height: 158 mm

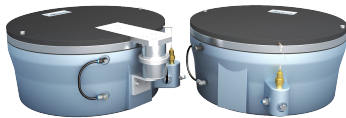
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	11.58	1494	2.51
4	15.76	1947	2.40
5	20.46	2400	2.29
6	24.40	2785	2.18

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

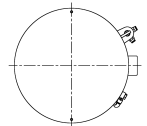
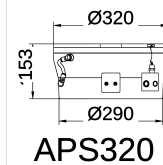
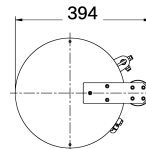
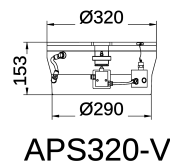
Product View



Low-profile diaphragm structure for precision isolation

Dimensions

Unit: mm



Basic Specifications

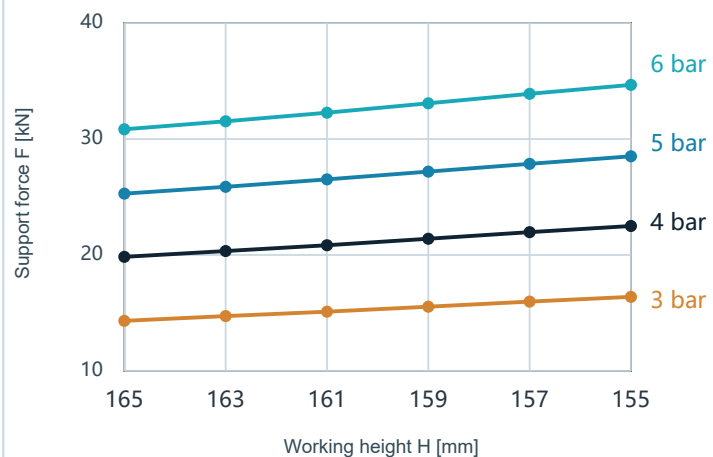
Model	APS320
Product weight	17 kg
Rated working height	158 mm
Operating temperature	-20 ~ +50°C
Structural damping ratio	0.1-0.2

Isolation Performance Data

Dynamic data at rated height: 158 mm

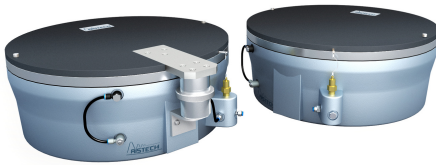
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	15.76	2076	2.47
4	21.68	2658	2.37
5	27.52	3240	2.27
6	33.49	3838	2.15

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

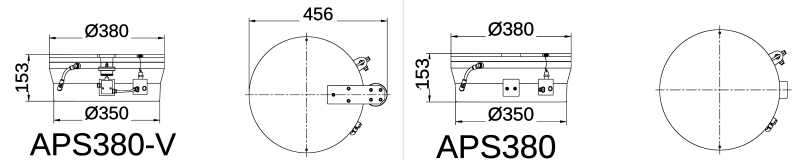
Product View



Low-profile diaphragm structure for precision isolation

Dimensions

Unit: mm



Basic Specifications

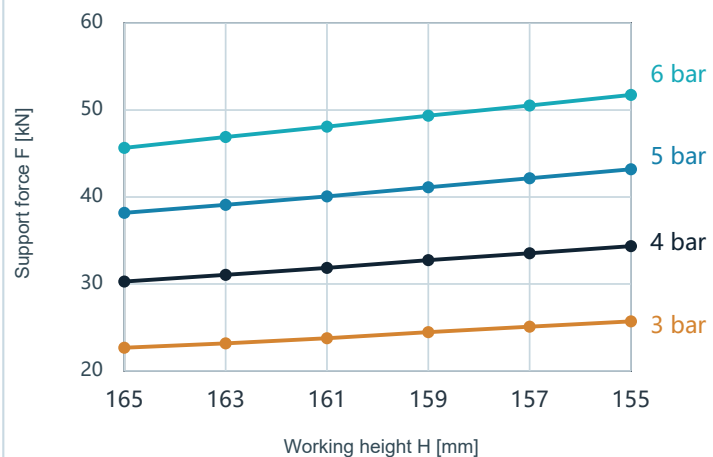
Model	APS380
Product weight	24 kg
Rated working height	158 mm
Operating temperature	-20 ~ +50°C
Structural damping ratio	0.1-0.2

Isolation Performance Data

Dynamic data at rated height: 158 mm

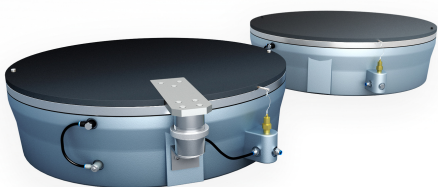
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	24.77	3181	2.49
4	33.14	4103	2.36
5	41.64	5025	2.23
6	49.94	6095	2.10

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

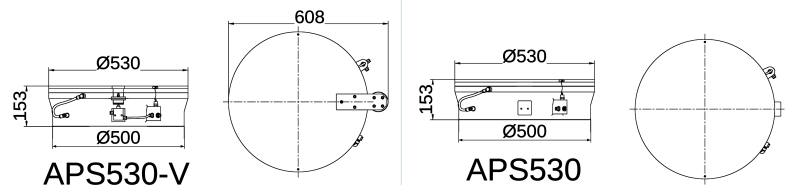
Product View



Low-profile diaphragm structure for precision isolation

Dimensions

Unit: mm



Basic Specifications

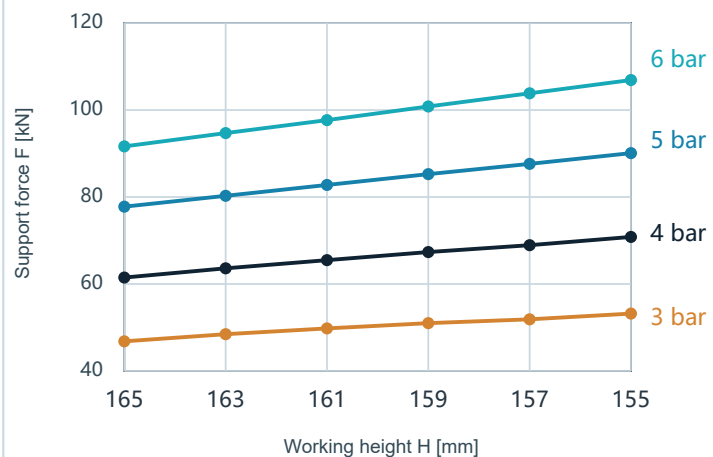
Model	APS530
Product weight	48.5 kg
Rated working height	158 mm
Operating temperature	-20 ~ +50°C
Structural damping ratio	0.1-0.2

Isolation Performance Data

Dynamic data at rated height: 158 mm

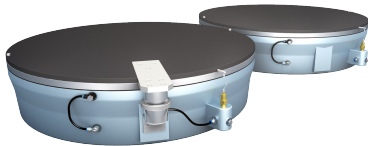
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	51.43	6628	2.48
4	68.13	9495	2.34
5	86.44	12362	2.20
6	102.33	15230	2.08

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

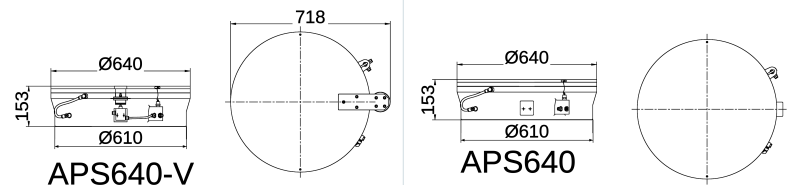
Product View



Low-profile diaphragm structure for precision isolation

Dimensions

Unit: mm



Basic Specifications

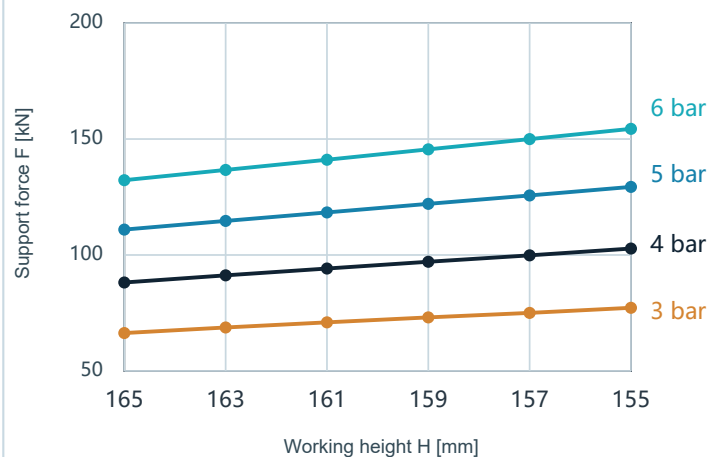
Model	APS640
Product weight	68.5 kg
Rated working height	158 mm
Operating temperature	-20 ~ +50°C
Structural damping ratio	0.1-0.2

Isolation Performance Data

Dynamic data at rated height: 158 mm

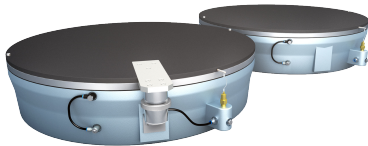
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	74.06	11051	2.50
4	98.46	14741	2.35
5	123.86	18431	2.20
6	147.76	22122	2.06

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

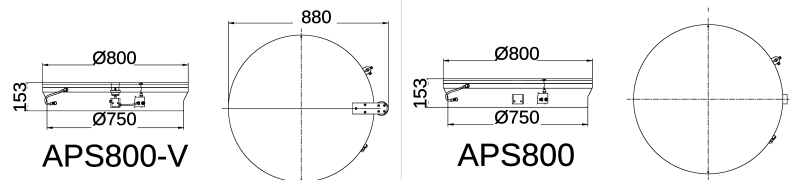
Product View



Low-profile diaphragm structure for precision isolation

Dimensions

Unit: mm



Basic Specifications

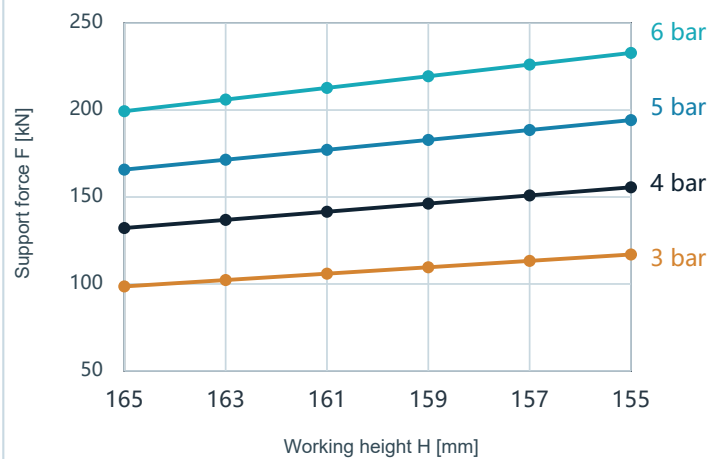
Model	APS800
Product weight	113 kg
Rated working height	158 mm
Operating temperature	-20 ~ +50°C
Structural damping ratio	0.1-0.2

Isolation Performance Data

Dynamic data at rated height: 158 mm

Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	111.44	18358	2.51
4	148.56	23407	2.36
5	185.67	28456	2.21
6	222.78	33507	2.04

Support Force vs. Working Height



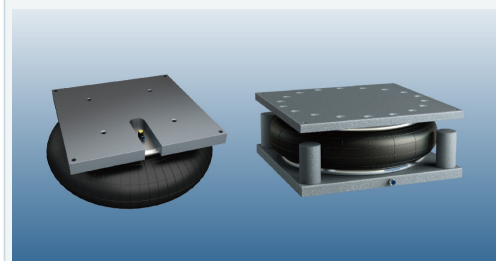
For model screening and rated working-point confirmation; project documents govern special conditions.

ABS / SERIES OVERVIEW

ABS Series | Large-Stroke Dynamic Test Benches

ABS bellows air isolators accommodate substantial height variation and dynamic travel under cyclic loading, moderate shock and large vertical motion. Applications include fatigue, durability, component dynamic-loading and powertrain endurance test benches.

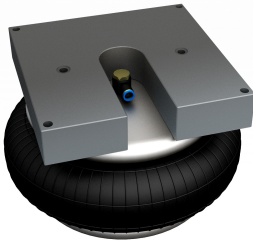
Standard ABS structures have low inherent damping. To tune effective stiffness, natural frequency or resonance response, match an auxiliary air chamber and restrictor circuit to the working point.



Model	Rated working height [mm]	Working pressure [bar]	Support force [kN]	Vertical natural frequency [Hz]	Page
ABS165	115	3-7	2.7-6.6	2.80-3.10	18
ABS215	135	3-7	3.9-9.6	2.60-2.90	19
ABS250	135	3-7	5.5-14	2.60-2.60	20
ABS325	155	3-7	10.7-25.4	2.30-2.50	21
ABS385	175	3-7	15.2-36.9	2.30-2.60	22
ABS440	175	3-7	28.7-68.4	2.20-2.30	23
ABS530	175	3-7	38.9-92.5	2.20-2.30	24
ABS580	175	3-7	53.6-126.7	2.10-2.30	25
ABS715	200	3-7	88.7-202.1	1.90-2.00	26
ABS950	200	3-7	162-383	1.90-2.00	27

- Large stroke
- Dynamic travel
- Moderate shock
- Fatigue and durability testing

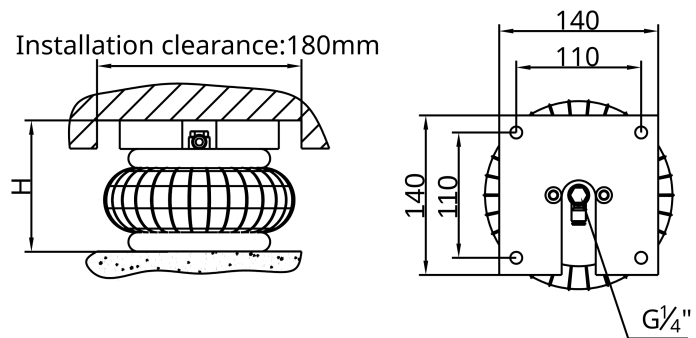
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

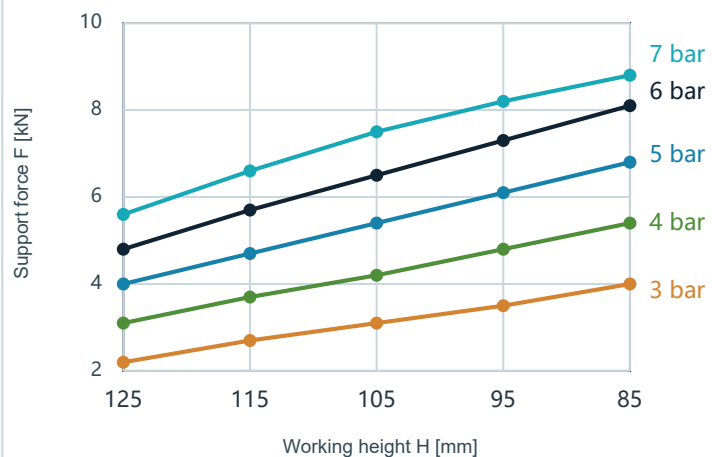
Model	ABS165
Product weight	4.2 kg
Rated working height	115 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	165 mm

Isolation Performance Data

Dynamic data at rated height: 115 mm

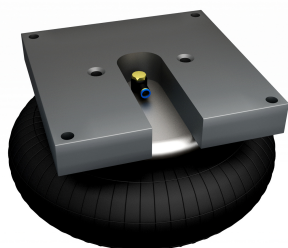
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	2.7	1040	3.1
4	3.7	1270	2.9
5	4.7	1530	2.8
6	5.7	1770	2.8
7	6.6	2060	2.8

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

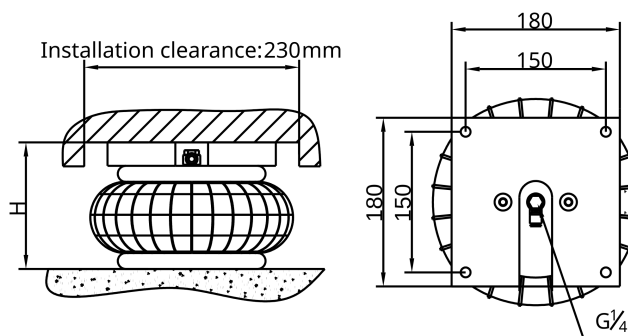
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

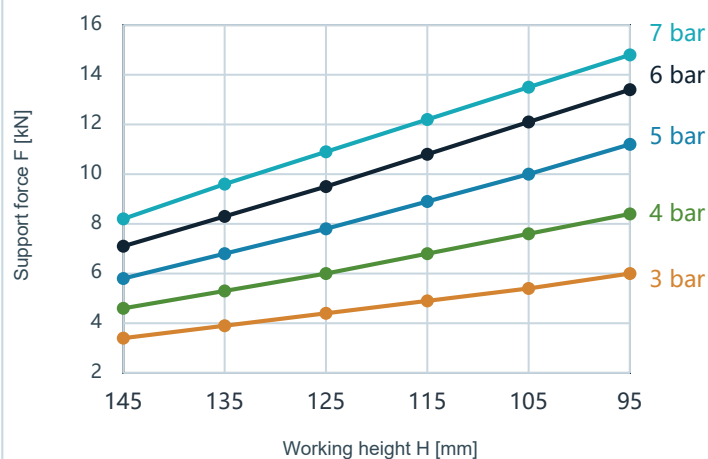
Model	ABS215
Product weight	10.2 kg
Rated working height	135 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	215 mm

Isolation Performance Data

Dynamic data at rated height: 135 mm

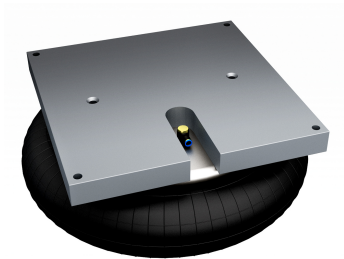
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	3.9	1315	2.9
4	5.3	1620	2.8
5	6.8	1925	2.7
6	8.3	2230	2.6
7	9.6	2535	2.6

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

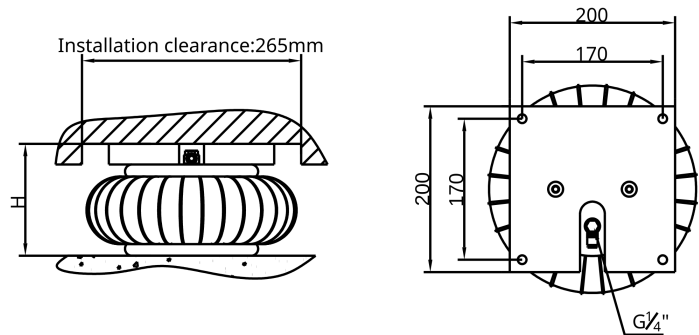
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

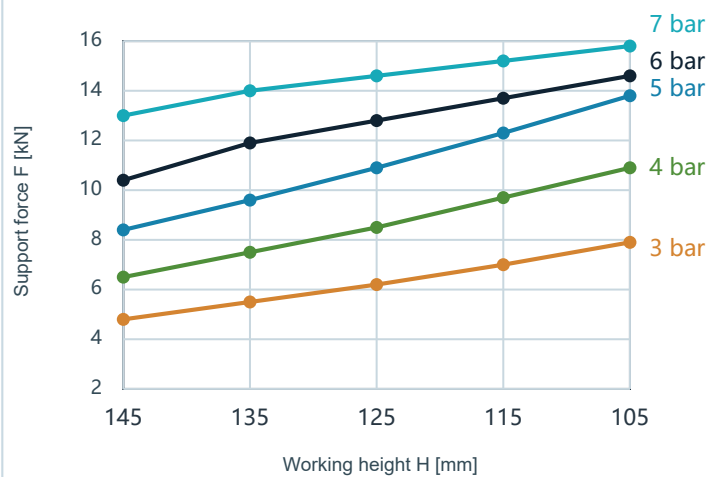
Model	ABS250
Product weight	13.8 kg
Rated working height	135 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	250 mm

Isolation Performance Data

Dynamic data at rated height: 135 mm

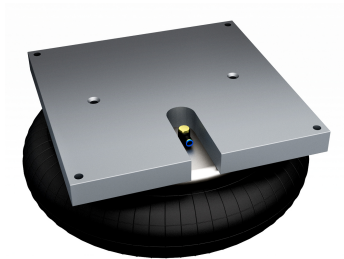
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	5.5	1500	2.6
4	7.5	2050	2.6
5	9.6	2600	2.6
6	11.9	3150	2.6
7	14.0	3700	2.6

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

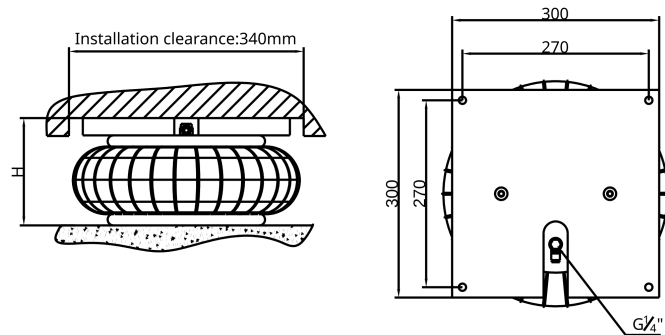
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

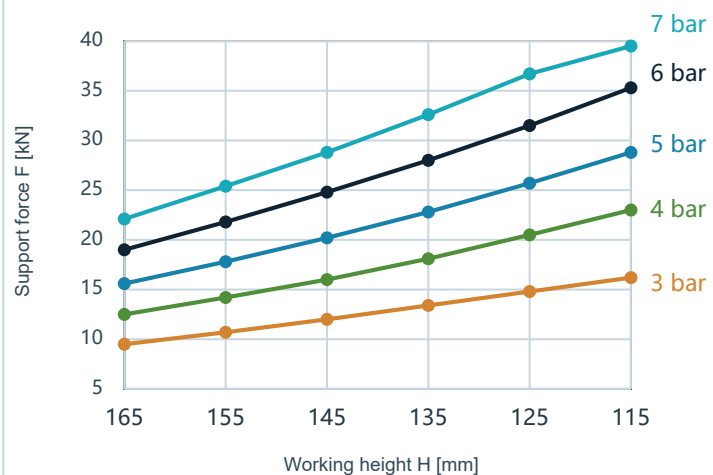
Model	ABS325
Product weight	20.8 kg
Rated working height	155 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	325 mm

Isolation Performance Data

Dynamic data at rated height: 155 mm

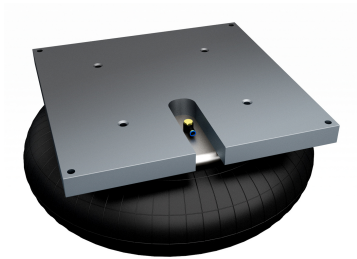
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	10.7	2645	2.5
4	14.2	3290	2.4
5	17.8	3935	2.4
6	21.8	4580	2.3
7	25.4	5225	2.3

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

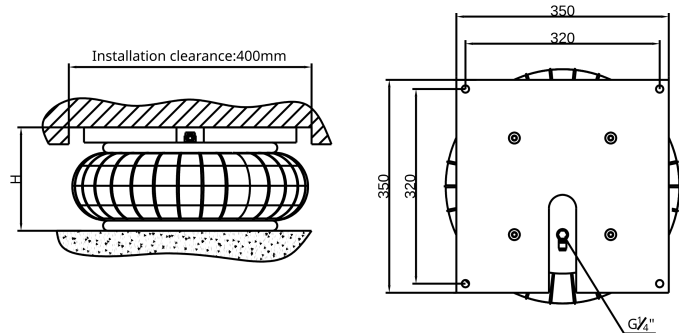
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

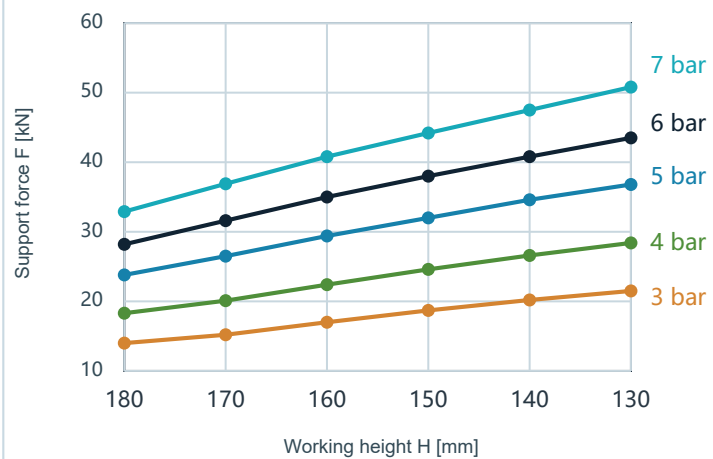
Model	ABS385
Product weight	23.1 kg
Rated working height	175 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	385 mm

Isolation Performance Data

Dynamic data at rated height: 175 mm

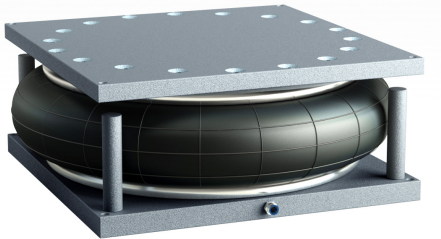
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	15.2	3970	2.6
4	20.1	5000	2.5
5	26.5	6080	2.4
6	31.6	7100	2.4
7	36.9	8130	2.3

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

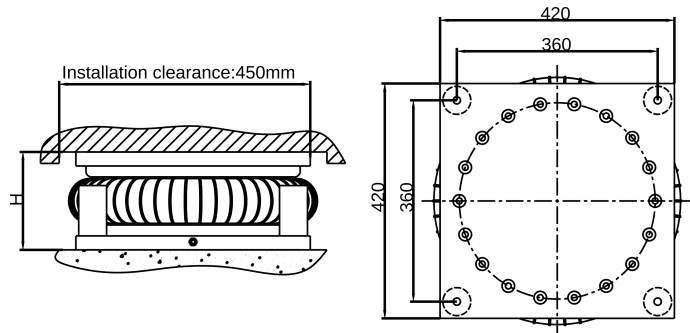
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

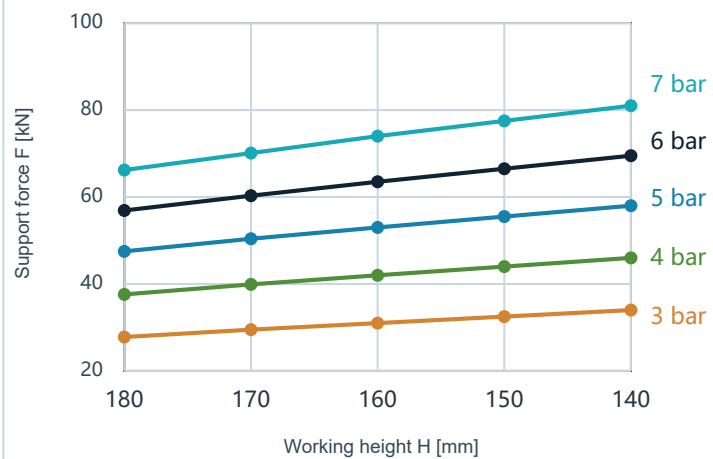
Model	ABS440
Product weight	31.5 kg
Rated working height	175 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	440 mm

Isolation Performance Data

Dynamic data at rated height: 175 mm

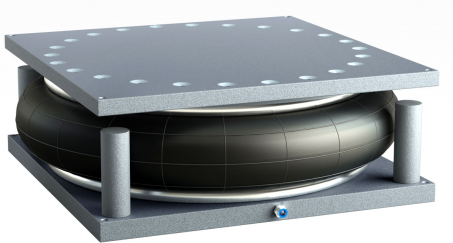
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	28.7	5950	2.3
4	38.8	7670	2.2
5	49.0	9240	2.2
6	58.7	11000	2.2
7	68.4	12760	2.2

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

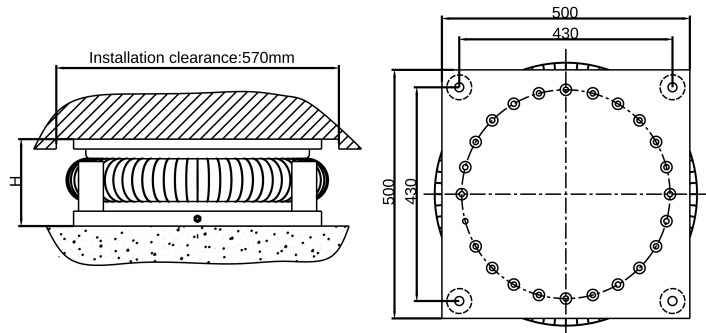
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

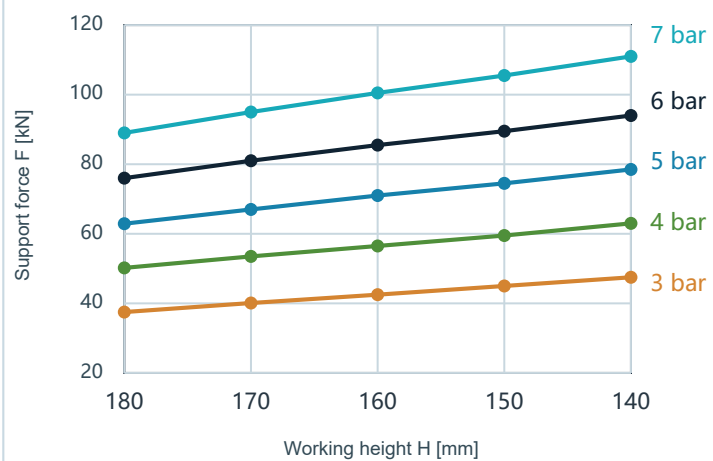
Model	ABS530
Product weight	46.5 kg
Rated working height	175 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	530 mm

Isolation Performance Data

Dynamic data at rated height: 175 mm

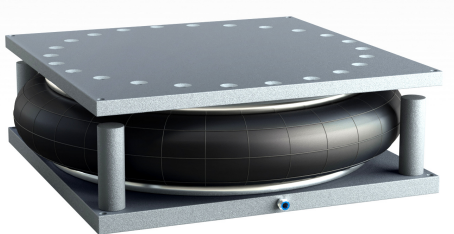
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	38.9	8130	2.3
4	52.1	10530	2.2
5	65.3	12740	2.2
6	79.0	15240	2.2
7	92.5	17660	2.2

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

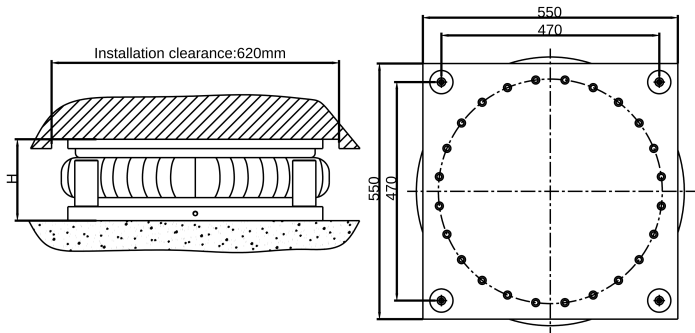
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

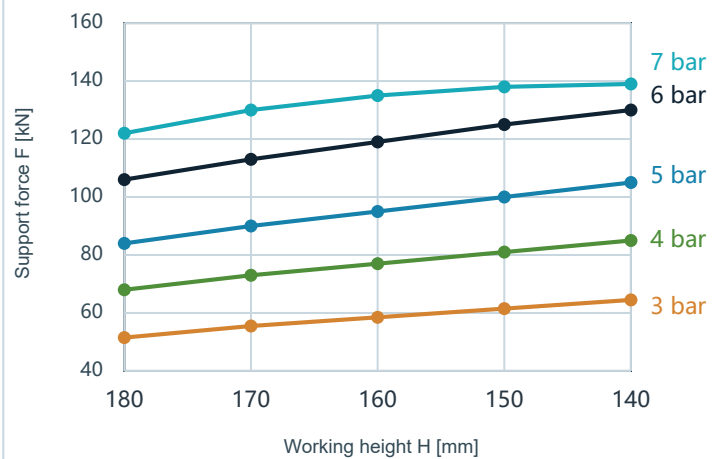
Model	ABS580
Product weight	57.8 kg
Rated working height	175 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	580 mm

Isolation Performance Data

Dynamic data at rated height: 175 mm

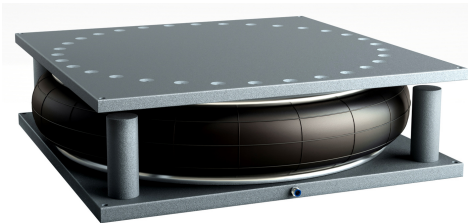
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	53.6	10190	2.3
4	70.6	12880	2.2
5	87.5	15510	2.1
6	110.0	18970	2.1
7	126.7	21540	2.1

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

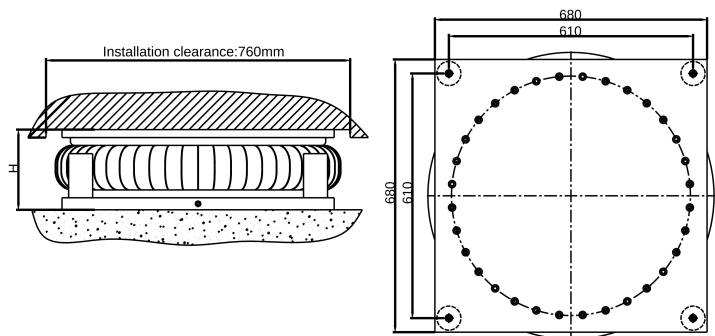
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

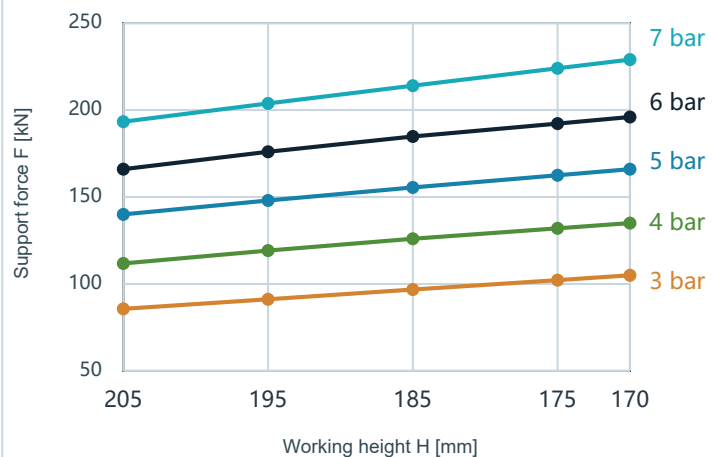
Model	ABS715
Product weight	77.5 kg
Rated working height	200 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	715 mm

Isolation Performance Data

Dynamic data at rated height: 200 mm

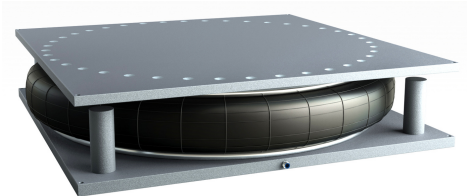
Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	88.7	14060	2.0
4	116.9	17620	2.0
5	145.2	21370	1.9
6	173.2	24830	1.9
7	202.1	28450	1.9

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

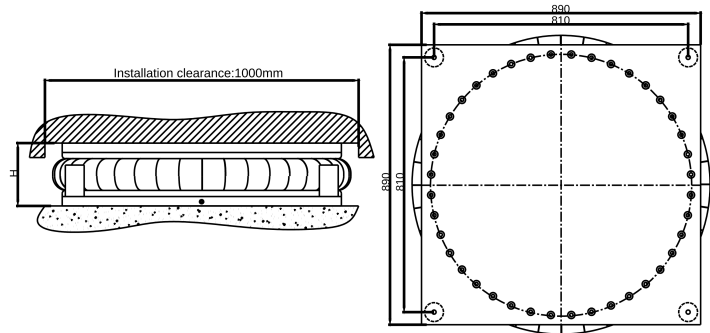
Product View



Bellows structure for low-frequency, high-load isolation

Dimensions

Unit: mm



Basic Specifications

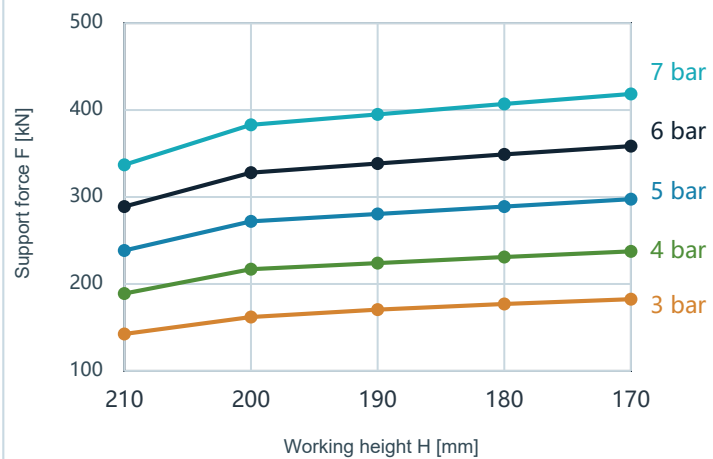
Model	ABS950
Product weight	105.0 kg
Rated working height	200 mm
Operating temperature	-40 ~ +50°C
Max. rubber diameter	950 mm

Isolation Performance Data

Dynamic data at rated height: 200 mm

Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
3	162.0	25780	2.0
4	217.0	33040	2.0
5	272.0	40150	1.9
6	328.0	46970	1.9
7	383.0	53750	1.9

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

GBS / SERIES OVERVIEW

GBS Series | Multi-Axis Heavy-Duty Foundations

GBS strap-reinforced air isolators use a restrained flexible structure for heavy-duty systems with vertical, lateral and multi-axis motion. Applications include four-post rigs, road simulators, reaction masses, heavy-duty strong floors and floating foundations.

For the 300 mm rated-height series, a matched auxiliary chamber can increase effective air volume and reduce vertical dynamic stiffness and natural frequency.



Model	Rated working height [mm]	Working pressure [bar]	Support force [kN]	Vertical natural frequency [Hz]	Page
GBS510-300	300	4-8	52-104	1.50-1.70	29
GBS610-300	300	4-8	83-165	1.30-1.50	30
GBS720-300	300	4-8	122-244	1.30-1.40	31
GBS845-300	300	4-8	165-329	1.40-1.50	32
GBS845-1200	1200	4-8	165-329	0.81-0.89	33

Motion limits

Verify vertical, lateral and multi-axis motion against the project structure.

Pneumatic configuration

The 300 mm series may use matched auxiliary chambers to reduce effective frequency.

Installation control

Define guidance, stops and levelling to suit the system motion.



Vertical and lateral loads



Multi-axis motion



High load



Four-post and road simulation

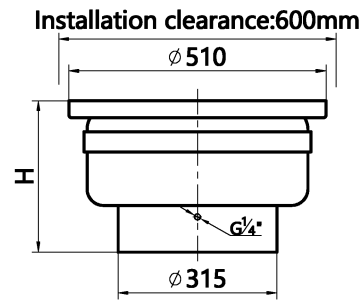
Product View



Heavy-duty structure for large foundations and low-frequency isolation

Dimensions

Unit: mm



Basic Specifications

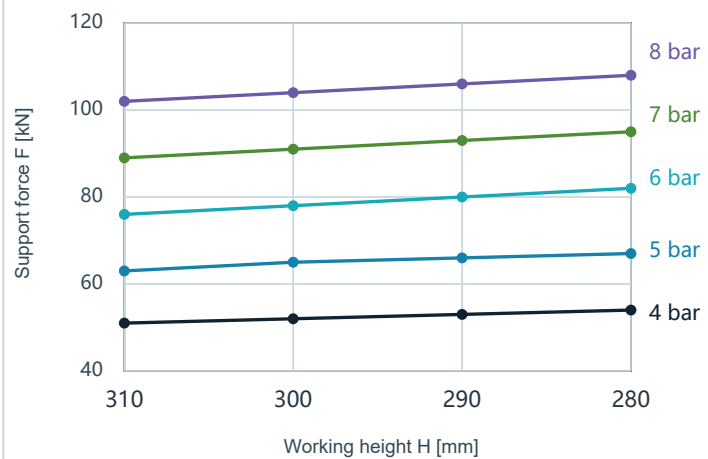
Model	GBS510-300
Product weight	32 kg
Rated working height	300 mm
Operating temperature	-40 ~ +50°C
Structural damping ratio	0.12

Isolation Performance Data

Dynamic data at rated height: 300 mm

Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
4	52	5650	1.7
5	65	6550	1.6
6	78	7700	1.6
7	91	8600	1.6
8	104	9300	1.5

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

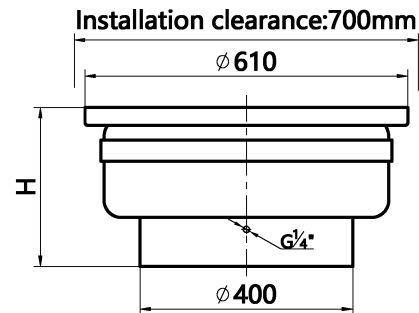
Product View



Heavy-duty structure for large foundations and low-frequency isolation

Dimensions

Unit: mm



Basic Specifications

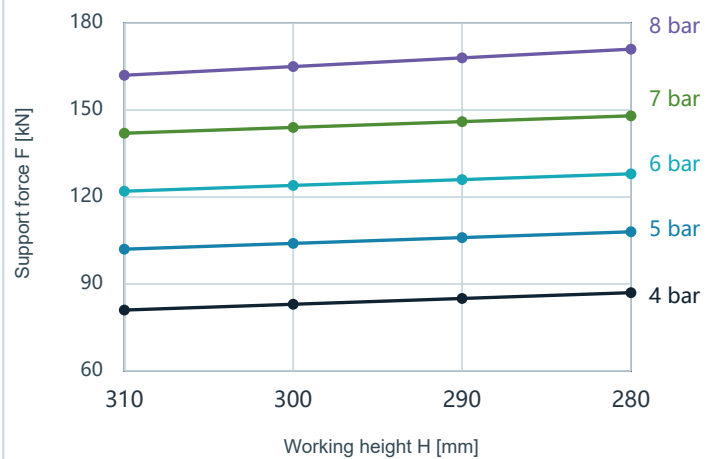
Model	GBS610-300
Product weight	56 kg
Rated working height	300 mm
Operating temperature	-40 ~ +50°C
Structural damping ratio	0.12

Isolation Performance Data

Dynamic data at rated height: 300 mm

Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
4	83	7500	1.5
5	104	8500	1.4
6	124	9600	1.4
7	144	10450	1.4
8	165	11450	1.3

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

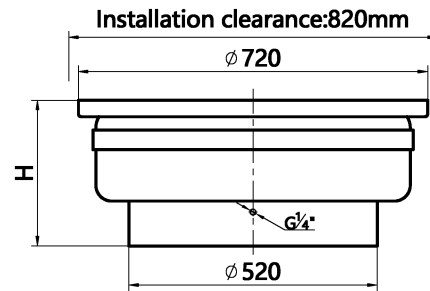
Product View



Heavy-duty structure for large foundations and low-frequency isolation

Dimensions

Unit: mm



Basic Specifications

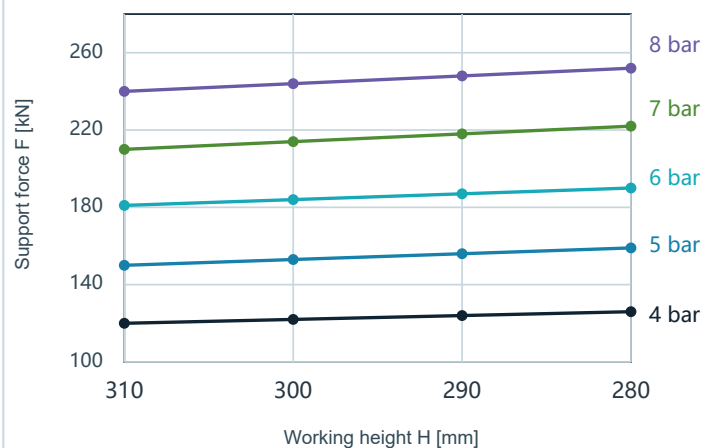
Model	GBS720-300
Product weight	81 kg
Rated working height	300 mm
Operating temperature	-40 ~ +50°C
Structural damping ratio	0.12

Isolation Performance Data

Dynamic data at rated height: 300 mm

Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
4	122	9900	1.4
5	153	11500	1.4
6	184	12700	1.3
7	214	14000	1.3
8	244	15300	1.3

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

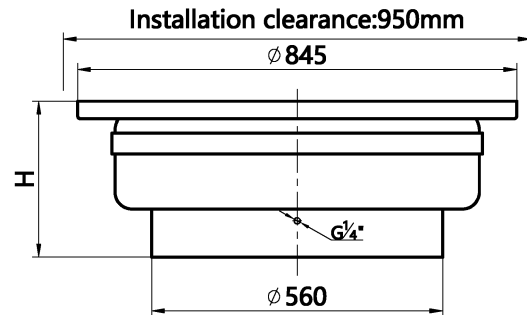
Product View



Heavy-duty structure for large foundations and low-frequency isolation

Dimensions

Unit: mm



Basic Specifications

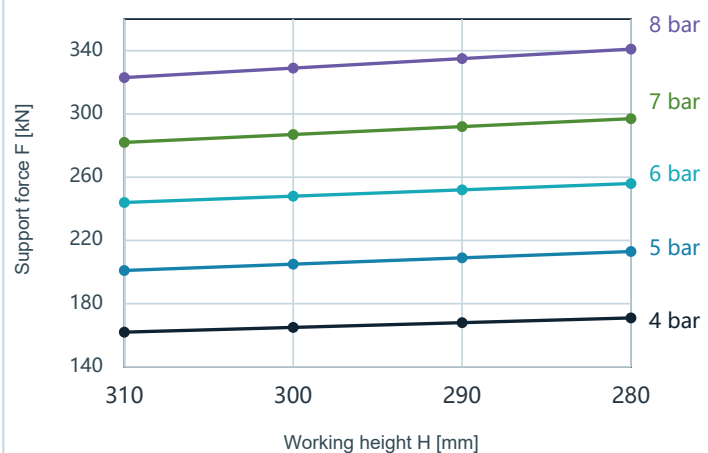
Model	GBS845-300
Product weight	105 kg
Rated working height	300 mm
Operating temperature	-40 ~ +50°C
Structural damping ratio	0.12

Isolation Performance Data

Dynamic data at rated height: 300 mm

Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
4	165	14400	1.5
5	205	17300	1.4
6	248	19600	1.4
7	287	21800	1.4
8	329	24200	1.4

Support Force vs. Working Height



For model screening and rated working-point confirmation; project documents govern special conditions.

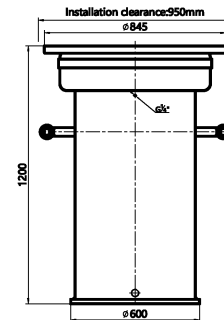
Product View



Heavy-duty structure for large foundations and low-frequency isolation

Dimensions

Unit: mm



Basic Specifications

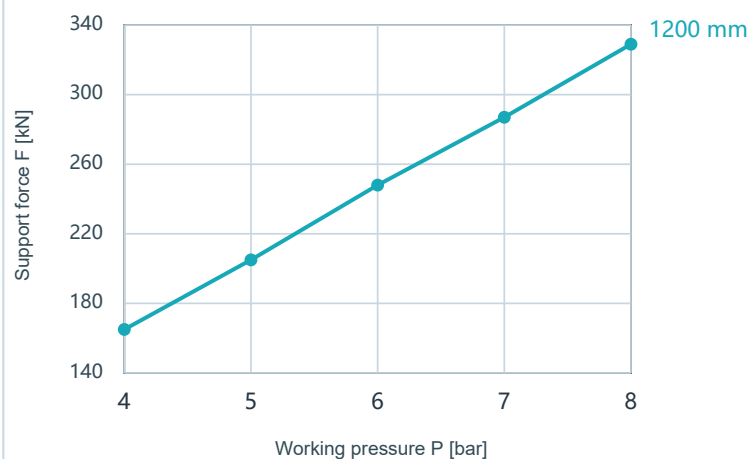
Model	GBS845-1200
Product weight	380 kg
Rated working height	1200 mm
Operating temperature	-40 ~ +50°C
Structural damping ratio	0.12

Isolation Performance Data

Dynamic data at rated height: 1200 mm

Pressure [bar]	Support force [kN]	Vert. dyn. stiffness [N/cm]	Vert. natural freq. [Hz]
4	165	4710	0.89
5	205	5490	0.86
6	248	6320	0.84
7	287	7150	0.82
8	329	7900	0.81

Support Force vs. Working Pressure

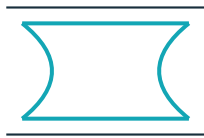


For model screening and rated working-point confirmation; project documents govern special conditions.

06 / PNEUMATIC TUNING

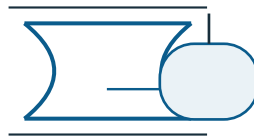
Auxiliary Air Chamber and Pneumatic Tuning

An auxiliary chamber changes effective air volume; restriction affects resonance damping. Match both to the working point.



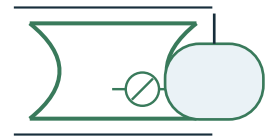
Standard air isolator

Provides basic pneumatic support within the model working-point range.



Air isolator + auxiliary air chamber

When fully connected, increased effective air volume can reduce vertical dynamic stiffness and natural frequency.



Air isolator + restrictor + auxiliary chamber

Restricted airflow creates pressure loss and energy dissipation to tune resonance response; results depend on restriction, piping and excitation.

ABS Series

- Tune effective stiffness at target point
- Tune pneumatic damping by restriction
- Verify travel and resonance response

GBS 300 mm Series

- Increase effective air volume
- Reduce vertical natural frequency when matched
- For reaction masses and road simulators

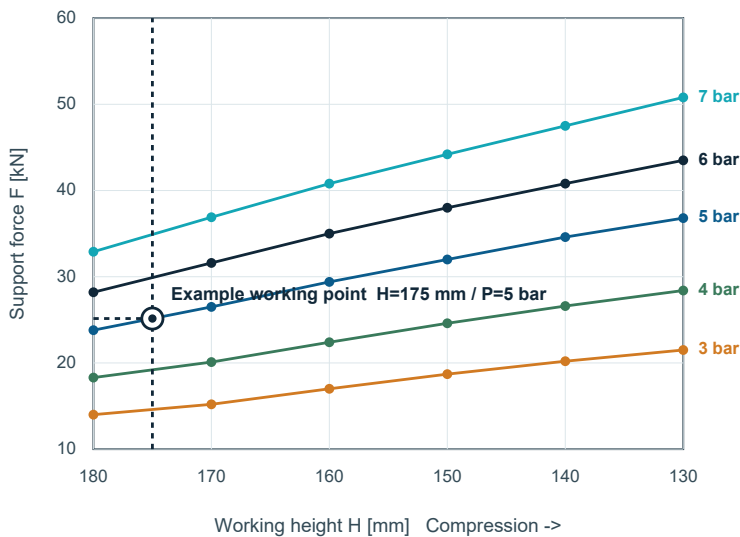
Auxiliary chamber and restrictor settings are project-specific; confirm volume, orifice and piping by calculation or test.

07 / CURVE READING

Curve Reading and Working-Point Confirmation

The controlled ABS385 curve shows how point reaction and target height determine pressure and working point.

ABS385 Support Force vs. Working Height



Markers are controlled data points; connecting lines show trends for preliminary reading only.

Four-Step Method

01

Determine point support reaction

Calculate from mass, CG, support coordinates and structural conditions.

02

Select model and pressure curve

Check rated working height, load range and available air pressure.

03

Confirm height-load intersection

Read force at target height and select the matching pressure curve.

04

Verify dynamics and limits

At the same point, verify stiffness, frequency, pressure margin and travel.

Working-Point Checklist



Support reactions verified from CG and support coordinates



Target height lies within the curve-data range



Air-pressure adjustment margin confirmed



Stiffness and frequency read at the same working point



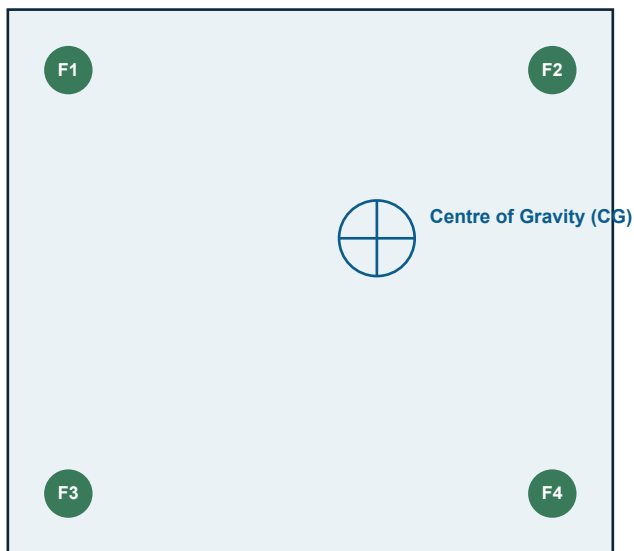
No linear or proportional extrapolation

08 / LOAD DISTRIBUTION

Multi-Point Support and Load Distribution

Determine each reaction from CG, support coordinates, supported-structure stiffness and design load cases.

Four-point support and CG layout



Verify static equilibrium, structural flexibility and operating conditions.

Support-point selection record

Point	Static reaction [kN]	Candidate	Pressure [bar]	Height [mm]
F1	Calculated	After selection	Set value	Rated value
F2	Calculated	After selection	Set value	Rated value
F3	Calculated	After selection	Set value	Rated value
F4	Calculated	After selection	Set value	Rated value

This is a project selection record without sample values. Screen by the maximum support reaction in each load case and verify pressure and height adjustment at all other points.

Selection principle

Do not determine point load by dividing total mass by support count alone. Calculate reactions from CG, coordinates and structural stiffness; verify flexible structures and significant dynamic loads by structural analysis and load cases.

09 / SYSTEM INTEGRATION

System Integration and Installation

Model-page working points are valid only when layout, interfaces, air control and motion limits match the project.



Support layout

Confirm support coordinates, CG and static/dynamic load distribution.



Mounting interfaces

Check interfaces, mounting holes, flatness, air ports and service access.



Air supply

Use clean, dry air with filtration, regulation, monitoring and zoned supply.



Automatic levelling

Define height sensing, valves, control logic and failure states.



Pneumatic tuning

Match chambers, restrictors and piping per the principles on page 34.



Guidance and stops

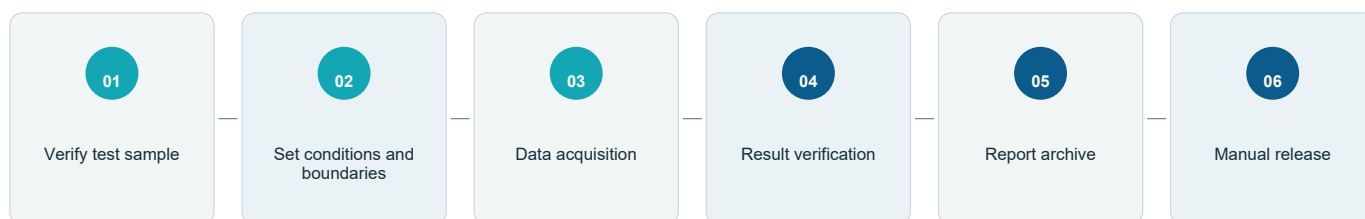
React off-axis loads and limit permissible motion and mechanical travel.

Installation drawings, stop dimensions, levelling logic, failure states and pneumatic circuits follow project documents.

10 / DATA TRACEABILITY

Test Validation and Data Traceability

Each value shall be traceable to model, pressure, height, boundary conditions, test report and manual revision.



Controlled data traceability record

Model	_____	Working pressure	_____ bar
Working height	_____ mm	Support force	_____ kN
Test date	___ / ___ / ___	Test report No.	_____
Data revision	_____	Manual revision	V1.0



AISTECH product performance test and data acquisition

Validation scope and revision control

Record load capacity, vibration transmissibility, isolation efficiency, operating conditions and installation state under a controlled test plan. Track design, data and model-status changes through the controlled data master, test reports and manual revisions.

11 / PROJECT INPUT

Project Input and Technical Contact

Complete project inputs are essential for valid model screening, working-point confirmation and system limits.

Test bench / foundation name

Total supported mass

kg

Centre-of-gravity coordinates (X / Y / Z)

Number and coordinates of supports

Design reaction at each support (if known)

kN

Target working height

mm

Available air pressure range

bar

Primary excitation frequency / spectrum

Hz / spectrum

Isolation target / target natural frequency

Hz / target

Primary motion directions and limits

Dynamic travel and shock conditions

mm / condition

Installation envelope and interfaces

Levelling and control requirements

Auxiliary chamber and damping requirements

Technical contact

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Lane 328 Hengyong Rd., Jiading, Shanghai, China


Website



Submit selection data



Air Spring Isolator Performance & Selection Data Manual

PERFORMANCE AND SELECTION DATA MANUAL

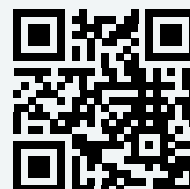


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This manual supports series selection, model screening and working-point reading. It does not replace project load calculations, system design, installation drawings or specifications.

Performance data are valid only at the stated pressure, height and test boundaries.