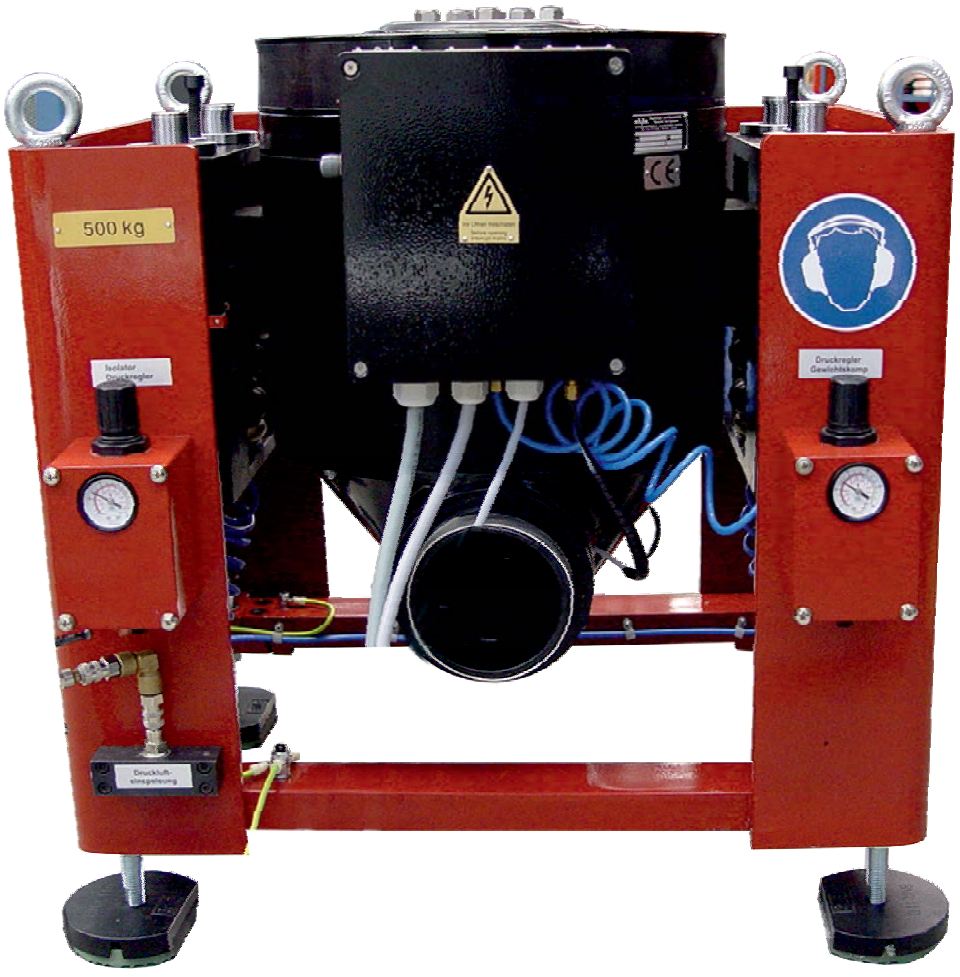
Dynamic Test Systems

1 - 3 kN air cooled

RMS

Electrodynamic Vibration Test Systems

SW2-1150APP (1KN)
SW2-2150APP (2KN)
SW2-3150APP (3KN)

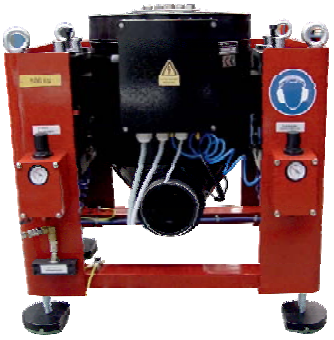


Technical subject to changes without prior notice !

Index

The vibrators SW2-1150 APP up to SW2-3150APP

Fields of Application
The 1-3 kN air cooled low force shaker series is designed with a light weight armature to test small and light weight specimens. They are suitable for resonance determination, premature aging and fatigue testing of sensors and electronic components. Several features make this shaker series reliable and affordable for your applications.
The shaker operates in a wide useful frequency range of 5 to 4000 Hz in sine, random and shock mode.



Air Cooled Design
The 1-3 kN force shaker series and the power amplifier of the TGE series are totally air cooled, an important feature for easy installation and economical operation.

High Payload support
A superior pneumatic load support system guarantees a full nominal displacement with a maximum vertical load for test specimen and fixtures.

Cooling Blower
The 1-3 kN force shaker systems are optional equipped with a blower silencer which significantly reduces the ambient noise.
An advanced noise reduction is possible by an additional acoustic enclosure.

Standard Vertical and Horizontal Operation
The 1-3 kN force shaker series are air-suspended in a rigid swivel frame in order to operate in vertical and horizontal configuration. The shaker can be easily moved in either vertical or a horizontal direction and can be used in combination with a slip table (3KN only) or environmental chamber with optional thermal barrier.

High Protection Standard
A high standard protection system of interlock circuits ensures the best level of protection for the operator, the test specimens and the systems themselves.

Controller
All RMS Shaker Systems can be operated with the RMS controller “Test Manager SWR1200 / SWR1220” and with all third party control systems .

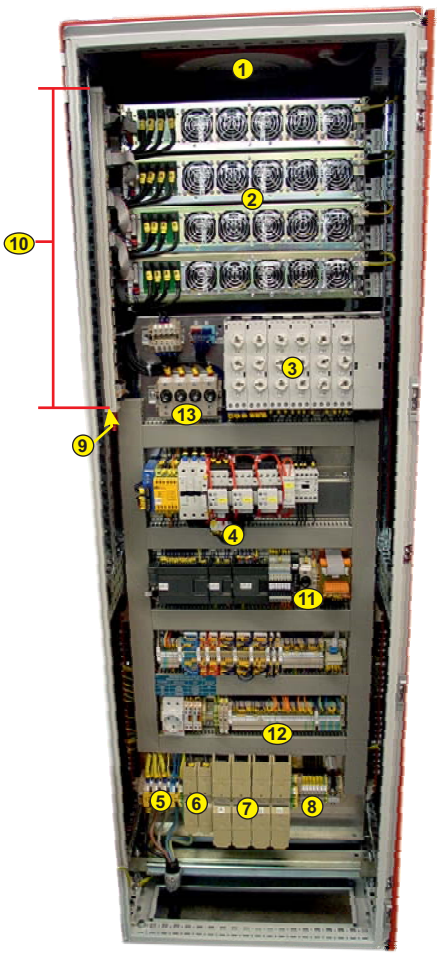
Power Amplifier
The systems are driven with a RMS power amplifier TGE series which is build as a 19” width and 2000 mm standard height cabinet or as a compact 700 mm height case.

- Air cooled design in accordance to European Type of Protection IP 53.

- **3** up to 160KVA output power in steps of 10KVA power modules
- **3**KVA power modules for low power shaker systems
- **U**sing latest MOSFET technology
- **H**igh efficiency
- **H**igh protection standards with a full range of system interlock circuits ensures high reliability
- **100%** compliance with international safety and EMC standards
- **110 kHz** switching frequency allow high signal bandwidth
- **Low** harmonic distortion
- **Compact** stand alone-design including field/degaussing field supply and EMI filter with free space for vibration controller or customer instrumentation.
- **PLC** controlled using touch screen user interface
- **Remote** controllable
- **Very high** peak performance for shock and random tests

All RMS shaker systems comply with the German, and international safety, EMI, EMC standards and the European Community directives:

- EU- Directive „Safety of machinery" 98/37/EWG
- DIN EN ISO 12100-1 and -2 , Safety of machinery Basis
- DIN EN 1050 Safety of machinery Principles for risk assessment
- DIN EN 60204-1, Safety of machinery Electrical equipment of machines
- DIN EN 50178, Electronic equipment for use in power installations
- DIN EN 61000-6-2 and -4, Electromagnetic compatibility (EMC)



RMS amplifiers have a clear structure according to CE and additional German and European industrial standards

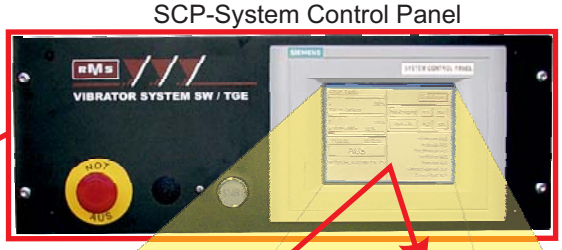
Legend

1 Fan
2 Power modules
3 Lead fuses
4 Blower motor protection relay
5 Mains connection
6 Field coil connection
7 Shaker connection
8 Blower connection
9 Reset button
10 Modul monitor
11 Fuses
12 Connection strip
13 Link fuses

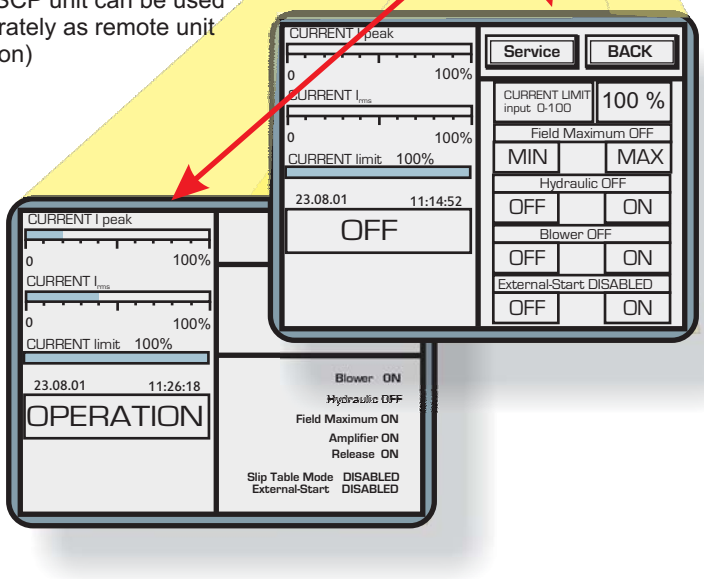
The operation of RMS-Electrodynamic Test Systems

Typical 19-inch rack configuration with:
- Power module TGE 10-4
- SCP System Control Panel
- Degaussing field supply

SCP-System Control Panel

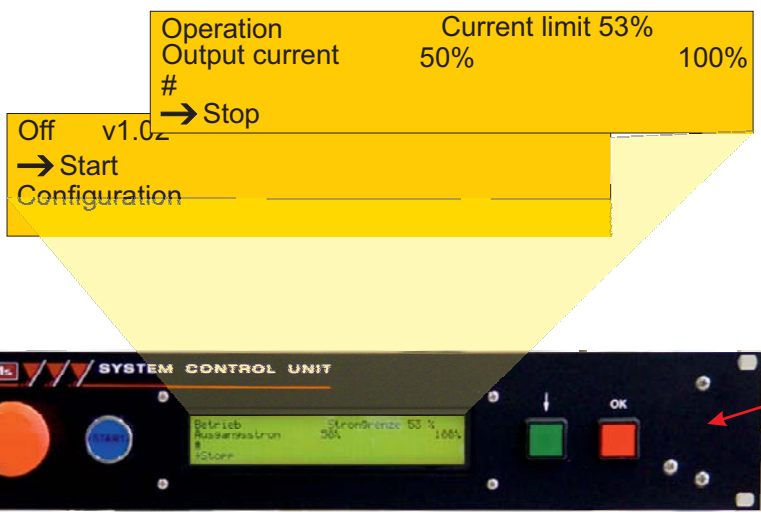


The SCP unit can be used separately as remote unit (Option)



SCP - System Control Panel
- comfort configuration (optional) -
recommended for larger system configurations with slip table.
The SCP - System Control Panel - provides instant access to all essential system information via touch screen input and LCD display. Panel can be used remotly.

SCU System Control Unit - Standard equipment for amplifiers TGE 10-X -
Microprocessor based amplifier / system control unit with LCD function display (monochrome) provides instant access to essential information of the system as amplifier status, setting including interlocks and output current information. Remote function for amplifier start / stop included.



Digital Controller "Test Manager SWR 1200 and SWR 1220"

Field of application:

The SWR 1200 Test Manager is an intelligent controller for the activation of electrodynamic and servo hydraulic vibrator systems.
With its modern microprocessor technology and ergonomically designed software architecture it is the first choice of testing and R&D departments. It is a useful tool in enforcing the application of many international test specifications (e.g. DIN EN 600 68-2, VDE, MIL, etc.)

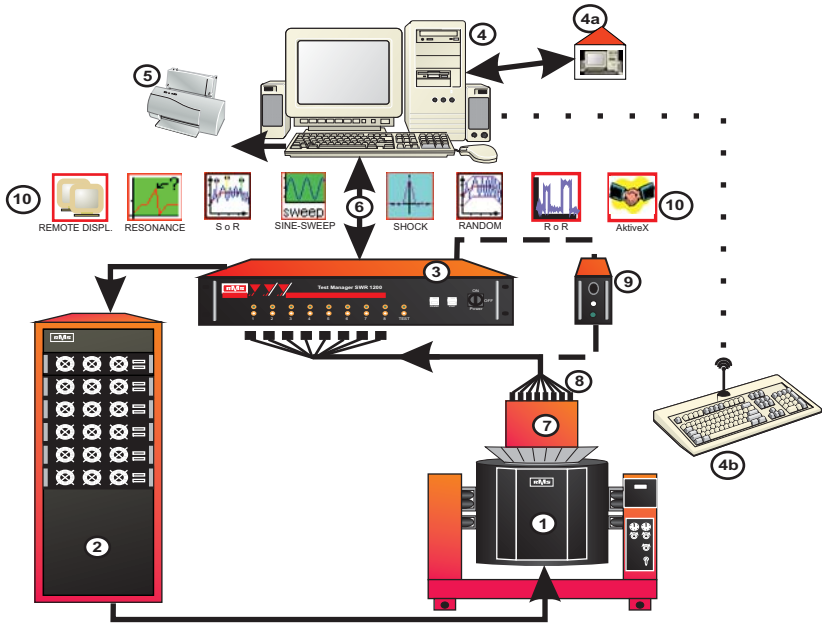
Characteristics:
The self-explanatory user interface (based on MS Windows) together with the modular upgrading concept are the main focuses of the SWR 1200. The Test Manager is networked (TCP/IP) and has comprehensive analysis functions.

Options:

The SWR 1200 Test Manager is available with the following options:

- Basic software: sine, random, shock
- Sine on random
- Resonance mode
- Road simulation
- ActiveX interface
- Test sequencing
- Remote display software
- 4 or 8 channel
- and more.....

Blockdiagram of a vibration system with controller

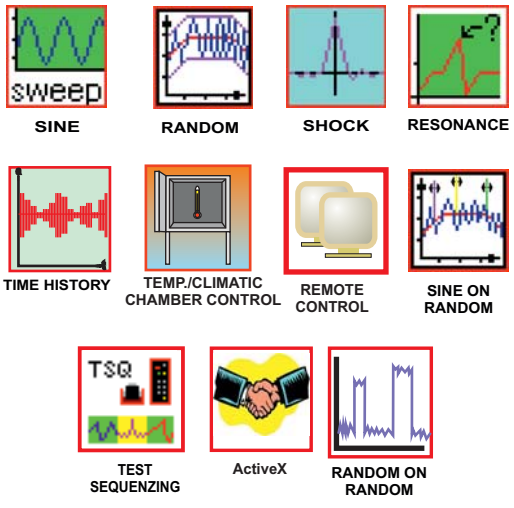


1. Vibration Generator
2. Power amplifier with or without Field Power Supply
3. Test Manager Controller SWR
4. Host-PC

4a. Host-PC 2 **4b:** Remote control unit

5. Printer
6. Network
7. Equipment under test (EUT), acceleration sensors connected (ICP-type)
8. Accelerometer
9. Charge amplifier - necessary when piezoelectric accelerometers used.
10. Software

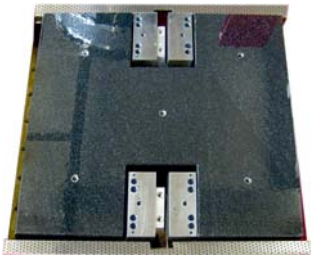
Software applications



RMS Dynamische Prüfsysteme

Horizontal slip tables

Field of application:
Horizontal slip tables extend the applications of vibration systems. A slip table is required in 3-axis tests where the operating position of the specimen is specified. The vertical axis (z) is tested on the shaker and the horizontal axes (x + y) on the slip table. The shaker can be pivoted within its frame for this purpose.
A slip table enables a test of very heavy or bulky specimen in a horizontal position. This combination is the perfect completion for specimens which have to be tested in their original fitting position.



Slip table base with V-bearings

Characteristics:
Vibrator and slip table are mounted on a common base element which is installed on air isolators to eliminate vibration transmission into the ground.
The slip plate with mounting inserts slides on an oil film provided by a hydraulic unit. Our horizontal slip tables consist of the slip table plate, linear bearings guidance, the coupling between shaker and plate and finally the main frame with integrated swivel frame and hydraulic supply.
The slip tables are suitable for combination with a temperature or climatic chamber.

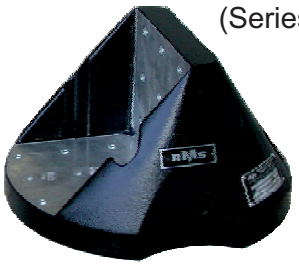
Slip table base with hydrostatic bearings

Options:

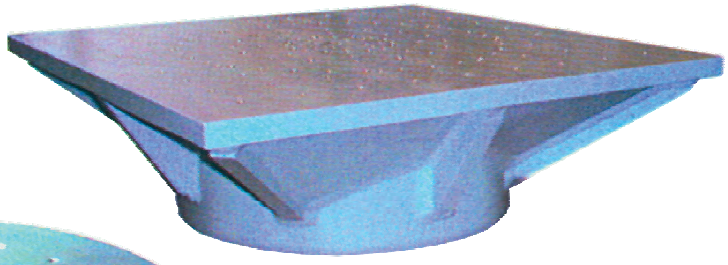
- **H**ydrostatic bearing design for enhanced guidance to support heavy payloads lead to a restrained movement, resulting in pure linear motion. (Type SWHxxx1)
- **R**egarding the application and the size and weight of the specimen, the hydrostatical guided slip table types can be optionally equipped with up to 7 bearings
- **V**arious slip table dimensions can be supplied for our different vibration systems.
- **G**rid design and thread dimensions can be selected.
- **S**uitable accessories are available for use in combination with a temperature/climatic chamber.
- **A** number of thermal barriers are available to protect the slip table against heat and cold from the connected temperature chamber.

Test fixtures and load-bearing platforms

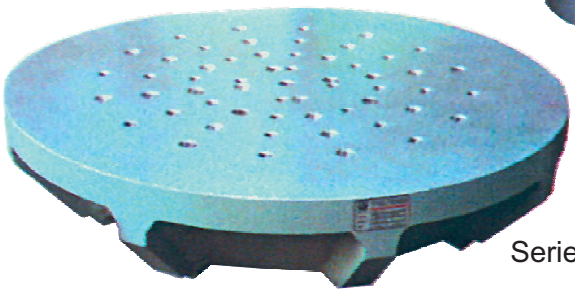
T-Form / L-Form
(Series SWP 5000/6000)



Series SWP 1000 / 2000



Test fixtures,
square, rectangular,
round.



Series SWP 3000

Field of application:
Only a small number of test items can be fastened directly onto the mounting surface of the vibrator. Shape, size and test position of the test items require custom-built fixtures.

Characteristics:
We use test fixtures made of magnesium- and aluminium cast plates. These fixtures can be directly bolted to the moving element of the vibrator. The specimen can be mounted by means of the threaded inserts in the plate.

Options:
A special multipart transmitter shaft with a thermal barrier is available for combined use with a temperature chamber. Fixtures with additional bearings are also available for our systems with more than 5 kN.

For additional information please contact RMS sales department at vertrieb@rms-testsystems.de

RMS-vibration systems in temperature- /climatic chamber operation

Field of application:
International test specifications of automobile and aircraft industry demand combined stress of vibration and temperature/climate. The challenge is to combine the vibration system optimal with the temperature/ climatic chamber.

Characteristics:
Due to our multi-functional interface between chamber and vibrator we accomplish an optimal sealing of the temperature/climatic chamber and an effective temperature protection for the vibrator. Thus we ensure a perfect combination with all well-known temperature climatic chamber manufacturers.

Options:
In close collaboration between our design engineers and the specialists for climatic chambers we develop special solutions for the individual requirements of our customers.

Technical Data SW2-1150APP (1KN)

Shaker Specification

SW2-1150APP			
Sine Force [KN] pk			1
Random Force [KN] rms (ISO5344)			1
Shock Force [KN] pk (half sine)			2
Usable Frequency Range [Hz]	5	---	4000
Armature -Resonance [Hz]			3800
Acceleration [m/s²] pk (shock/sin))*1	851		426
Velocity [m/s] pk (shock/sine))*2	2,3	/	2
Displacement [mm] pk-pk (shock/sine)	25	/	25
Moving Mass [kg] (rated)			2,35
Load Support [kg] (max)			70
Armature Table Diameter [mm]			150
Insert Pattern Number			13
Insert Pattern Thread (metric)			8
Total Weight [kg])*3			420
Dimensions (HWD) [mm]	688 x	700 x	615
Shaker noise [dBA] (max))*4			120
SystemTotal Power Consumption [KVA]			3,39

)*1: @ rated armature weight
)*2: @ 150mm above armature table
)*3: @ external raw water temp. 25°C
)*4 @ 1m distance, incl. silencer

Amplifier Specification

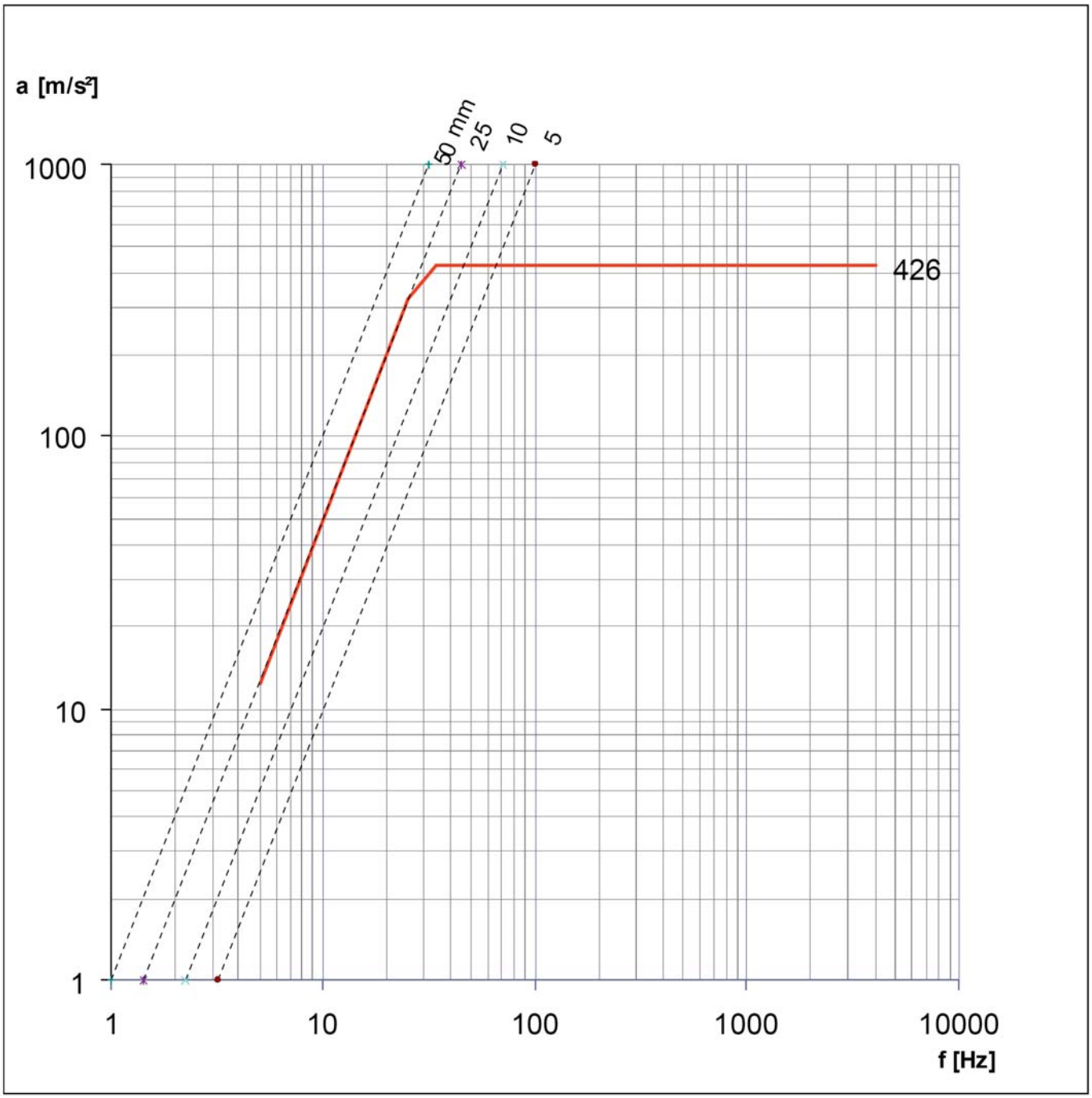
Typ	Number of Cabinets
TGE3	1
Number of Power Moduls	1
Output Power [KVA]	3
Output Current [A] rms	40
Peak Current [A] pk	160
Output Voltage [V] rms/peak	90 / 240
Efficience [%]	85-90
Switching Freq. [kHz]	110
Signal input [V] rms (for rated output voltage)	2
Signal-to-Noise [dB]	68
Bandwidth [Hz] (-3dB)	5000
Dim. (HWD) [mm]	1980x610x820
Weight [kg]	300

Notes
optional small height rack

Blower

Motor Power [KW]			0,75
Dimensions (HWD) [mm]	500 x	435 x	400
Air Flow [m³/min]			4
Blower Noise [dBA])*6			58

Sine Performance Curve : SW2-1150APP



Technical Data SW2-2150APP (2KN)

Shaker Specification

SW2-2150APP		
Sine Force [KN] pk		2
Random Force [KN] rms (ISO5344)		2
Shock Force [KN] pk (half sine)		4
Usable Frequency Range [Hz]	5 ---	4300
Armature -Resonance [Hz]		3700
Acceleration [m/s²] pk (shock/sin))*1	1600	800
Velocity [m/s] pk (shock/sine))*2	1,8 /	2
Displacement [mm] pk-pk (shock/sine)	25 /	25
Moving Mass [kg] (rated)		2,5
Load Support [kg] (max)		70
Armature Table Diameter [mm]		150
Insert Pattern Number		13
Insert Pattern Thread (metric)		8
Total Weight [kg])*3		420
Dimensions (HWD) [mm]	728 x 700 x	615
Shaker noise [dBA] (max))*4		120
SystemTotal Power Consumption [KVA]		4,47

)*1: @ rated armature weight
)*2: @ 150mm above armature table
)*3: @ external raw water temp. 25°C
)*4 @ 1m distance, incl. silencer

Amplifier Specification

Typ	Number of Cabinets
TGE3	1
Number of Power Moduls	1
Output Power [KVA]	3
Output Current [A] rms	40
Peak Current [A] pk	160
Output Voltage [V] rms/peak	90 / 240
Efficience [%]	85-90
Switching Freq. [kHz]	110
Signal input [V] rms (for rated output voltage)	2
Signal-to-Noise [dB]	68
Bandwidth [Hz] (-3dB)	5000
Dim. (HWD) [mm]	1980x610x820
Weight [kg]	300

Notes
optional small height rack

Blower

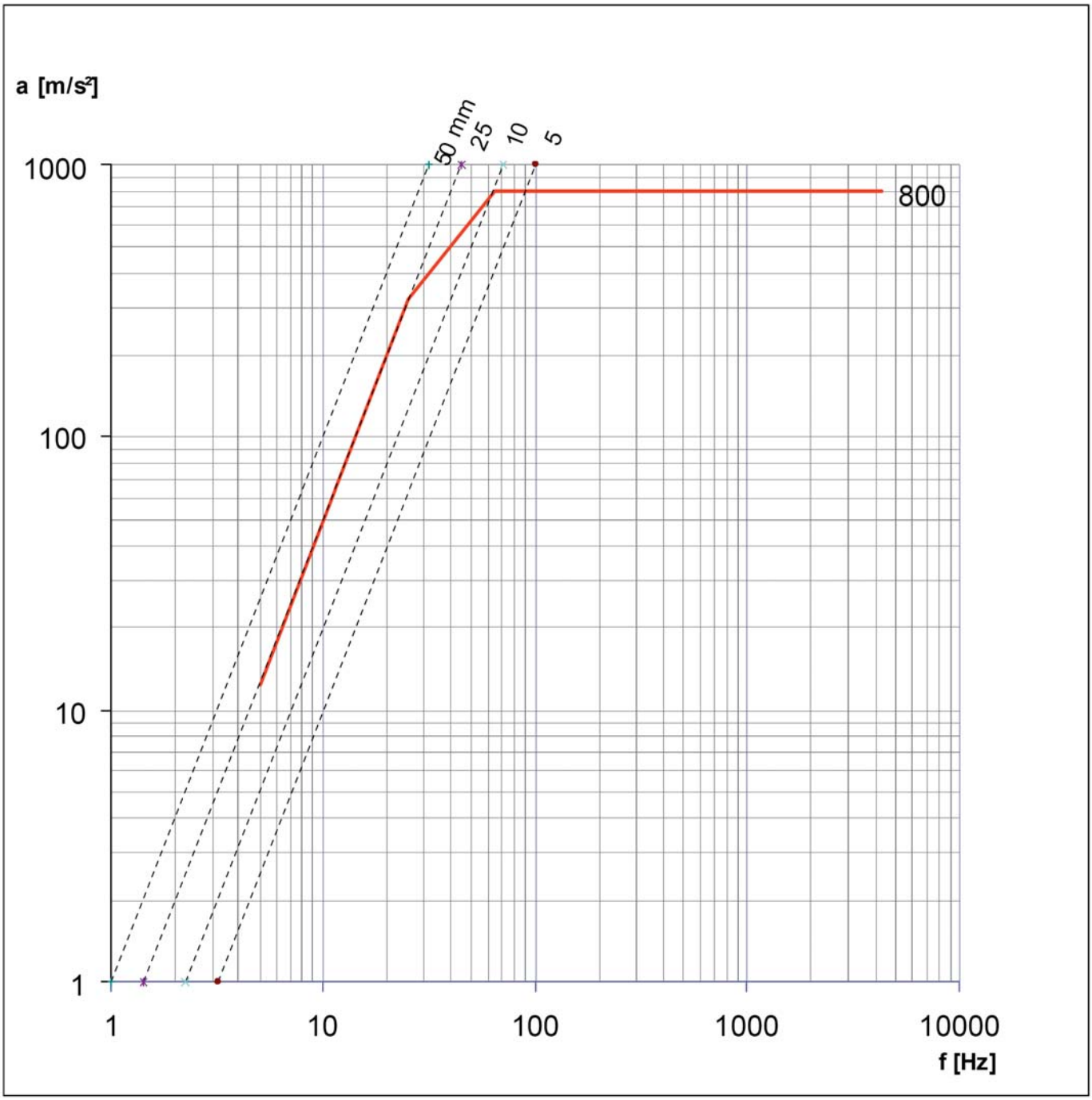
Motor Power [KW]	0,75
Dimensions (HWD) [mm]	500 x 435 x 400
Air Flow [m³/min]	6
Blower Noise [dBA])*6	58

Usable slip tables

RMS-GT-Type	Thickness [mm]	Material	Mass[kg])*1	Size [mm]	max. Load [kg]	Bearings
SWH300	30	MG	9	300×300	100	1
SWH400	30	MG	14	400×400	150	1
SWH500	30	MG	20	500×500	200	1
SWH600	40	MG	37	600×600	300	1
SWH700	45	MG	55	700×700	400	2

)*1 slip table types ending with: 1 = hydrostatic bearings, 0 = V-groove bearings)*2 incl. joint
)*3 depending on the location of the payload on the table

Sine Performance Curve : SW2-2150APP



Technical Data SW2-3150APP (3KN)

Shaker Specification

SW2-3150APP

Sine Force [KN] pk			3
Random Force [KN] rms (ISO5344)			3
Shock Force [KN] pk (half sine)			6
Usable Frequency Range [Hz]	5	---	4000
Armature -Resonance [Hz]			2900
Acceleration [m/s²] pk (shock/sin))*1	1800		968
Velocity [m/s] pk (shock/sine))*2	2	/	2
Displacement [mm] pk-pk (shock/sine)	25	/	25
Moving Mass [kg] (rated)			3,1
Load Support [kg] (max)			120
Armature Table Diameter [mm]			150
Insert Pattern Number			13
Insert Pattern Thread (metric)			8
			500
Dimensions (HWD) [mm]	750	x 764 x	632
Shaker noise [dBA] (max))*4			120

SystemTotal Power Consumption [KVA]	3,99

)*1: @ rated armature weight
)*2: @ 150mm above armature table
)*3: @ external raw water temp. 25°C
)*4 @ 1m distance, incl. silencer

Amplifier Specification

Typ	Number of Cabinets
TGE3	1

Number of Power Moduls	1
Output Power [KVA]	3
Output Current [A] rms	40
Peak Current [A] pk	160
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Signal-to-Noise [dB]	68
Bandwidth [Hz] (-3dB)	5000
Dim. (HWD) [mm]	1980x610x820
Weight [kg]	300

Notes
optional small height rack

Blower

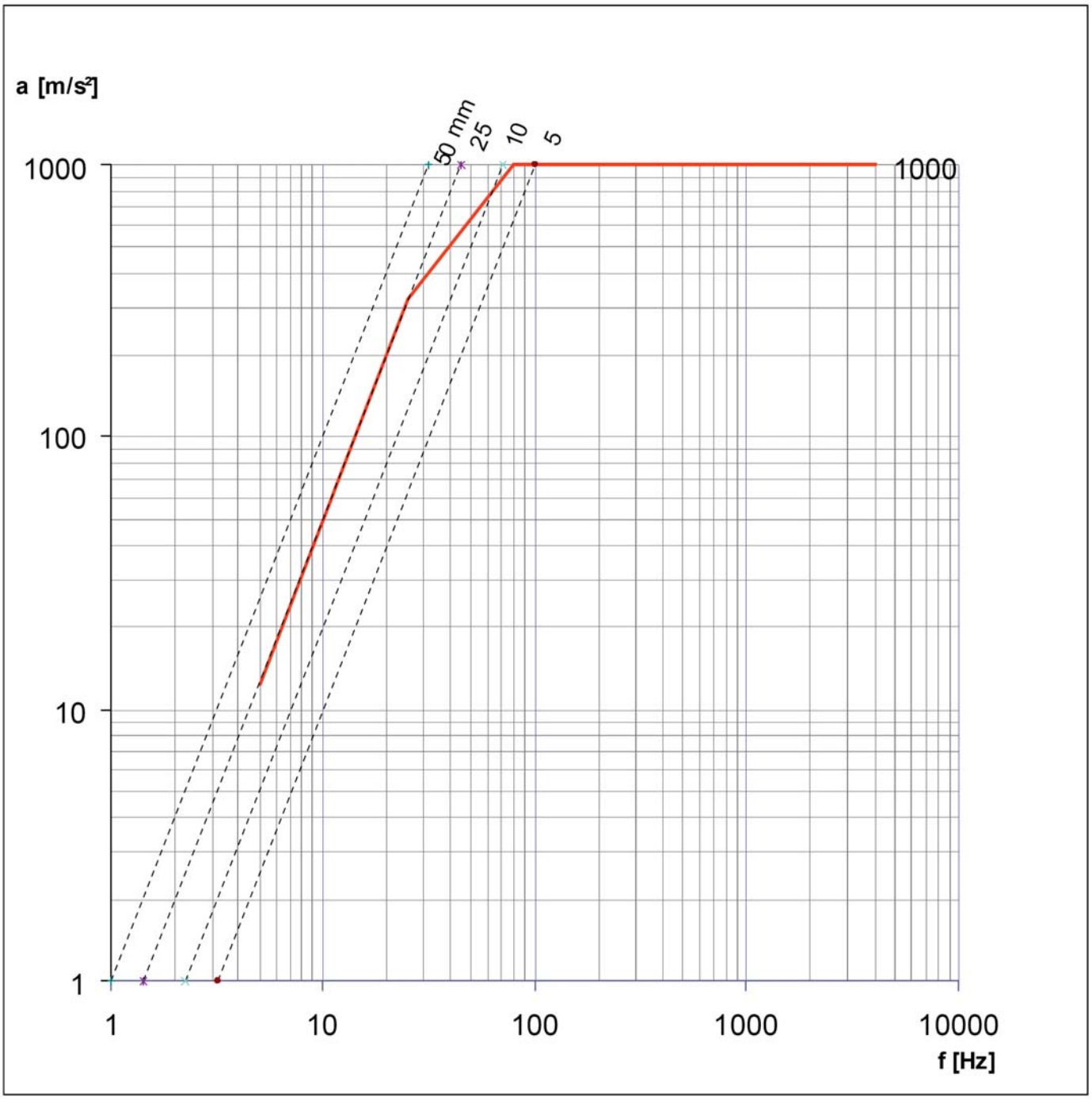
Motor Power [KW]			0,75
Dimensions (HWD) [mm]	500	x 435 x	400
Air Flow [m³/min]			3,8
Blower Noise [dBA])*6			58

Usable slip tables

RMS-GT-Type	Thickness [mm]	Material	Mass[kg])*1	Size [mm]	max. Load [kg]	Bearings
SWH300	30	MG	9	300×300	100	1
SWH400	30	MG	14	400×400	150	1
SWH500	30	MG	20	500×500	200	1
SWH600	40	MG	37	600×600	300	1
SWH700	45	MG	55	700×700	400	2

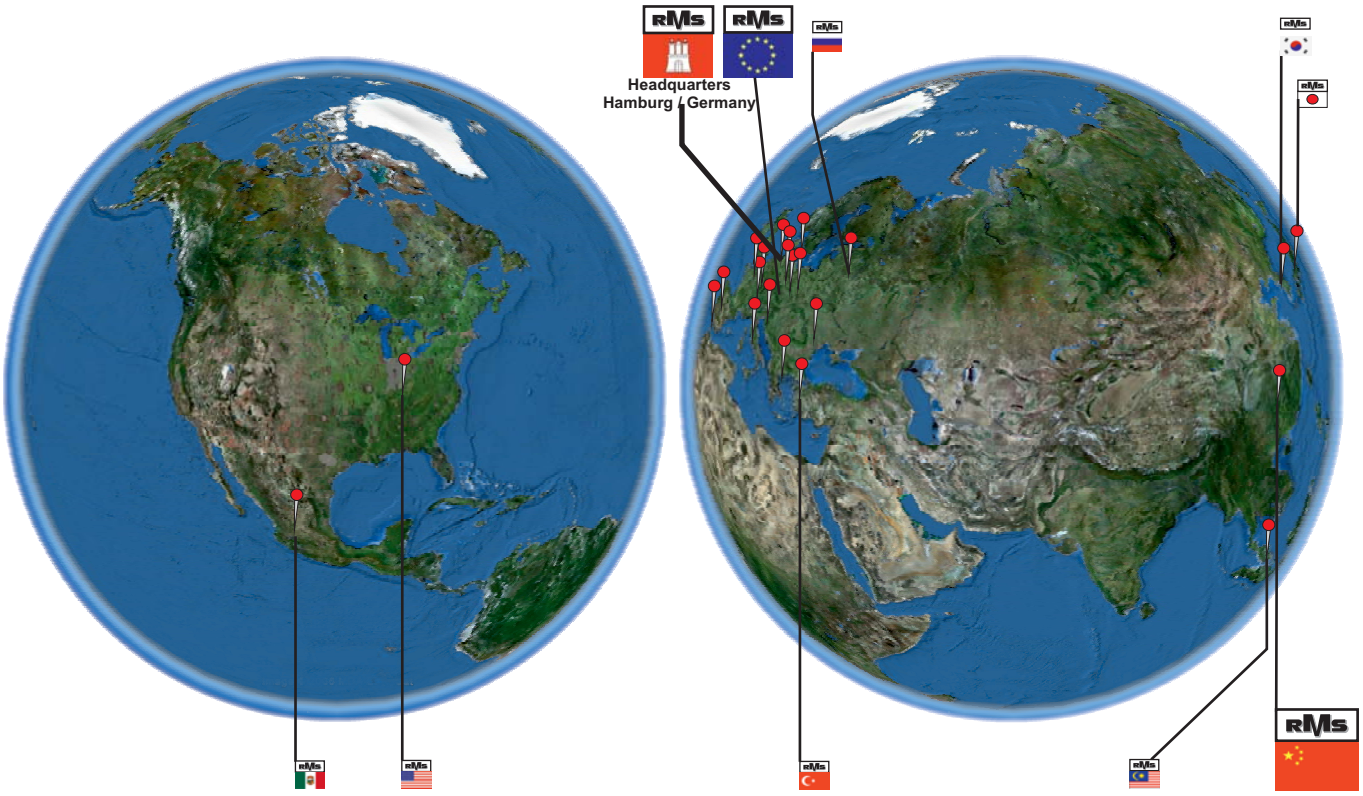
)*1 slip table types ending with: 1 = hydrostatic bearings, 0 = V-groove bearings)*2 incl. joint
)*3 depending on the location of the payload on the table

Sine Performance Curve : SW2-3150APP



RMS Dynamic Test Systems

RMS worldwide distribution network



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