PRESSES

GERB

ELASTIC SUPPORT OF PRESSES

Typical Spring Viscodamper®
Combination for Elastic Support of Presses

During the operation of presses, strong vibrations are caused by speed changes of moving parts, the impact of the ram and especially during cutting processes, which can lead to unacceptable disturbance and inconvenience in the neighbourhood. Moreover, high-frequency vibration components lead to structure-borne noise in adjacent rooms.

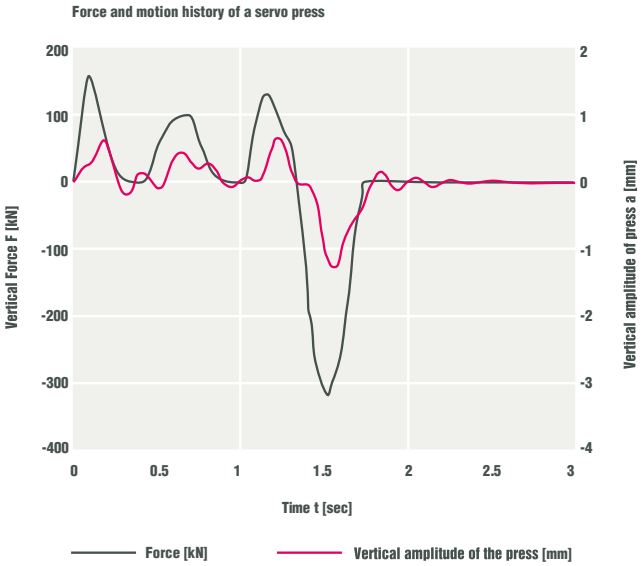
Elastic support provided by GERB spring units can considerably reduce the vibrations caused by the press. Reductions in the vibration speeds – as a yardstick for the assessment of the vibration – of about 80% and more are possible.

A significant aspect for the dimensioning of the elastic support of presses is the type of the vibration excitation. In the case of 1-crank and 2-crank presses, imbalance in the crank operation of freely acting forces of inertia at the crankshaft level can cause severe tilting motions of the machine. In such a case, it may become necessary to provide a foundation block as a vibration-damping mass or an enlarged base frame to enhance the rotational stability in order to restrict the movements of the system within permissible limits.

In 4-point crank presses, transfer and hydraulic presses, the vibrations are caused primarily by the vertically accelerated or retarded masses. With the elastic support of larger hydraulic presses, and also with mechanical car body and transfer presses, low-frequency vibrations often need to be taken into consideration either as vibrations of the moving masses or as pillar vibrations. These frequencies may be in resonance either with the natural frequencies of buildings or with the natural bending frequencies of wide-span floors and lead to severely enhanced levels of vibration caused by the resonance.

Presses equipped with a servo drive place an extraordinary demand on the elastic support. Specially adapted support systems are necessary as a result of the high flexibility of this type of press design.

GERB has developed support systems, in close cooperation with renowned manufacturers of servo presses that meet these requirements.



Typical Spring Viscodamper®
Combination for Elastic Support of Presses

For elastic support of presses GERB offers:

» SPRING UNITS

+ Spring units with high-quality cylindrical helical compression springs in rigid housing shells.

» VISCODAMPERS®

+ VISCO® damping connected in parallel to spring units ensures machine stability and enhances its efficiency. However, the damping also means that the machine quickly comes to rest or returns to its idle state after each stroke.

» BLOCKING DEVICES

+ It is necessary to be able to transfer the tool easily between the fixed foundation and the elastically supported press for a streamlined process of tool change. GERB has developed different blocking devices for this purpose. These can be supplied as separate block supports or even as blocking systems that are integrated into the spring Visco-damper® combinations.

» ENGINEERING

+ Apart from the supply of spring units and Viscodampers®, GERB provides overall planning and complete civil engineering for the press foundations.

» VIBRATION MEASUREMENTS

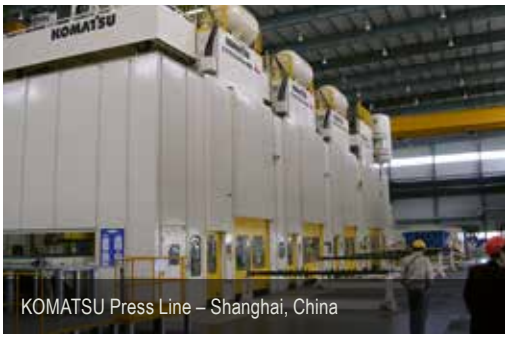
+ Measurements can be made to determine in advance whether a press intended to be installed will cause impermissible or unreasonable levels of vibration in the vicinity, just as the options for reducing the vibrations can be specified prior to installation.

» ASSEMBLY

+ GERB also offers services for the installation or supervision of installation of the elastic support. In case of subsequent settlement of the foundation soil, if required, GERB fitters realign the press within a short period of time.

Please consult our project engineers for this purpose.

SCHULER Transfer Press – Germany



KOMATSU Press Line – Shanghai, China


PRESSMASTER – India

AP & T Hydraulic Press – Sweden

The installation on prestressable GERB spring units ensures the press can be easily aligned and even realigned in case of sinking supports. Usually, no bolts are required for fixing of the spring units. Fixing is done with self-adhesive resilient pads supplied by GERB.

Acceleration levels used as a yardstick for the vibration and wear of presses are consistently lower in isolated installations than in the case of rigid installation.

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SCHULER BEUTLER

SMS EUMUCO HASENCLEVER - Austria

KIESERLING – India

FARINA

Reference List (Selection)

Elastic Support of Presses

Country	Client	City	Manufacturer	Capacity (kJ)
Forging Presses				
Austria	Böhler Bernhofer	Kapfenberg Höhnhart	SMS Eumuco Müller-Weingarten	132,000 144,000 7,000
China	Wuxi Turbine Blade Fact Wendeng Tianrun Forg. Shaanxi Fastgear Co. Quanzhou HengLiDa	Wuxi, Jiangsu Wendeng, Shandong Xian, Shaanxi Quanzhou, Fujian	SMS Meer Müller-Weingarten Müller-Weingarten Voronezh	224,000 128,000 35,000 25,000
France	Snecma	Gennevilliers	Müller-Weingarten	80,000
Germany	Buderus Thyssen-Umformtechnik Gerlach	Wetzlar Remscheid Homburg	Müller-Weingarten Lasco Eumuco	63,000 8,000; 10,000 120,000
India	Sona Okegawa Sunstar Forging GKN Driveline	Gurgaon Greater Noida Chennai	Enomoto Smeral Komatsu	12,500 40,000; 16,000 16,000
Italy	Valseccheia Giovanni Berco Molla	Valmadrera Copparo Solbiate Arno	Manzoni Müller-Weingarten Voronezh	2,500 144,000 80,000
Mexico	Forjamex		Eumuco	5,000
Slovenia	Unior	Zrece	Müller-Weingarten	3,200
Taiwan	Yung-Tai OZE Industrial	Taichung	Müller-Weingarten Chin Fong	10,000 10,000
USA	Thyssen Krupp Gerlach Utica	Denville/Illinois Utica/New York	Eumuco SMS Hasenclever	120,000 80,000
Presses for Sheet-Metal Processing				
China	VW GM BMW-Shanghai Dong-Feng Nissan Great Wall Auto Chery Auto	Shanghai Shanghai Shenyang, Liaoning Guangzhou, Guangdong Boading, Hebei Wuhu, Anhui	Schuler Müller-Weingarten Schuler Komatsu Fagor Arraste Jier Machine-tool Group	
Czech Republic	Skoda	Mlada Boleslav	Müller-Weingarten	
France	Renault	Sandouville	AIDA	
Germany	AUDI BMW Daimler Chrysler Opel VW	Ingolstadt Dingolfing Sindelfingen Rüsselsheim Mosel	Müller-Weingarten Schuler Müller-Weingarten Schuler Müller-Weingarten	
Great Britain	IBC Vehicles Rover	Luton Swindon	Müller-Weingarten Müller-Weingarten	
India	Caparo JBM SKH Tata Motors	Gurgaon/Jamshepdur Gurgaon/Manesar Gurgaon/Manesar/Pune Sanand	Isgec/Kaushico Isgec/HMT/Erfurt/Schuler Keiserling/HMT/Emco Pr Schuler	
Italy	Iveco-Fiat	Brescia	Clearing	
Japan	Kikuchi Press	Hamura	AIDA	
Korea	Sung Woo Coil Center Samsung Motor	Yang San Pusan	Ssang Yong Press Kojima, Fukui Kikai	
Malaysia	Proton	Petaling Jaya	Komatsu, Hitachi Zosen	
Mexico	Benteler de Mexico	Puebla	Umformtechnik Erfurt	
Netherlands	Volvo Car Polynorm	Bunschoten	Müller-Weingarten Dieffenbacher	
Spain	Opel SEAT VW	Zaragoza Barcelona Barcelona	Müller-Weingarten Umformtechnik Erfurt Arrasate	
Schweden	Volvo Car	Olovström	Müller-Weingarten	
USA	Ford Radar	Dearborn/Michigan Warren/Michigan	Eumuco Schuler Brazil	

GERB
WORLDWIDE

» Made in Germany. Since 1908. Worldwide.

The following information is required for the design of elastic support systems of presses:

» Type and manufacturer of the press
» Arrangement drawing (Installation plan)
» Total weight of the press
» Weight of the unbalanced moving masses
» Stroke
» Number of strokes/min

In addition, for screw presses:

» Screw diameter

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VIBRATIONS CAN BE CONTROLLED – WHEREVER THEY OCCUR

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