

安全型产品 Safety Products

安全型缓冲器CSS38-CSS63系列

CSS38 to CSS63 Safety Shock Absorbers



安全 Safety

高安全系数
High safety factor

平稳 Smooth

提供平稳恒定的减速
Smooth constant deceleration

定制 Customization

根据客户应用的特殊定制
Special orifices by application

Automation Control 自动化控制

Motion Control 运动控制

Vibration Control 振动控制

Safety Products 安全型产品



Miniature Shock Absorbers, Industrial Shock Absorbers, Profile Dampers, Damping Pads
小型缓冲器，工业缓冲器，轮廓阻尼器TUBUS，缓冲垫



Industrial Gas Springs, Hydraulic Dampers, Hydraulic Feed Controls, Door Dampers, Rotary Dampers
工业气弹簧（推型，拉型），液压阻尼器，稳速器，门阻尼器，旋转阻尼器



Rubber-Metal Isolators, Vibration-Isolating Pads, Low Frequency Pneumatic Levelling Mounts
隔振脚垫，隔振垫，低频气浮式减振器



Safety Shock Absorbers, Safety Dampers, Clamping Elements, Viscoelastic Shock Absorbers
安全型液压缓冲器，安全型阻尼器，锁紧单元，粘滞介质缓冲器

We are your Specialists for Industrial Damping Technology 您的工业阻尼技术专家

ACE is the world's globally recognized specialist in the field of industrial damping technology – with agencies in 45 countries on all continents.

ACE是全球公认的工业阻尼技术领域专家，我们分布全球45个国家。

ACE develops, produces and sells a wide range of damping products. It comprises industrial and safety shock absorbers, profile dampers, rotary dampers, industrial gas springs, hydraulic dampers, vibration isolators, air springs and hydraulic feed controls.

The products assert themselves particularly in future-oriented companies because there are virtually no better solutions to quickly, gently and precisely slow down moving masses or to isolate harmful vibrations.

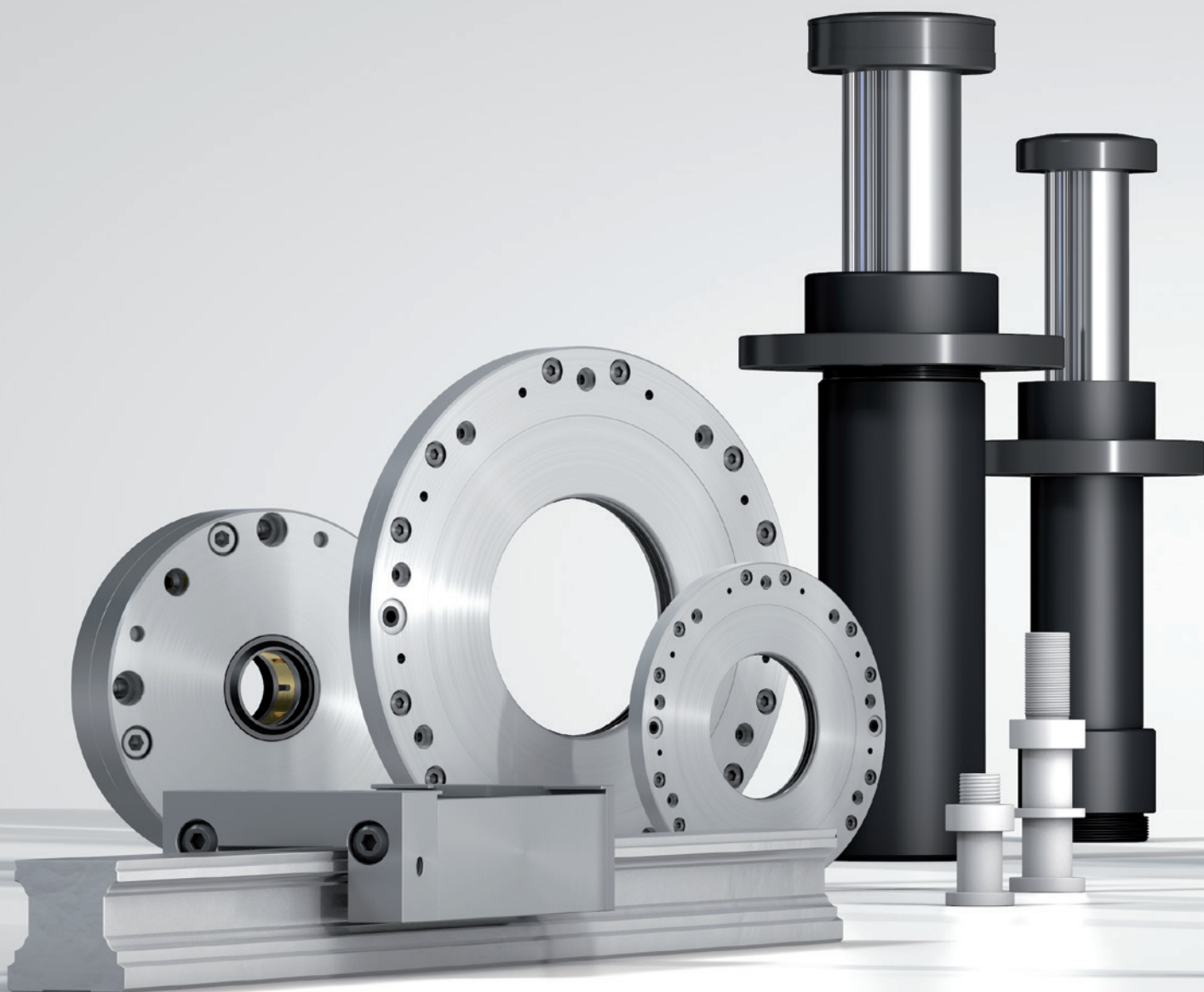
ACE开发、生产和销售各种阻尼产品。它包括工业和安全型缓冲器、TUBUS阻尼器、旋转阻尼器、工业气弹簧、液压阻尼器、隔振器、气浮式隔振器和液压稳速器。

这些产品确保我们的竞争优势，始终为客户的设备及系统提供更快、更平稳、更精确的减速，或为客户有效隔绝有害的振动。

Safety Products 安全型产品

Safety Shock Absorbers, Safety Dampers
Clamping Elements

安全型液压缓冲器，安全型阻尼器，夹紧单元



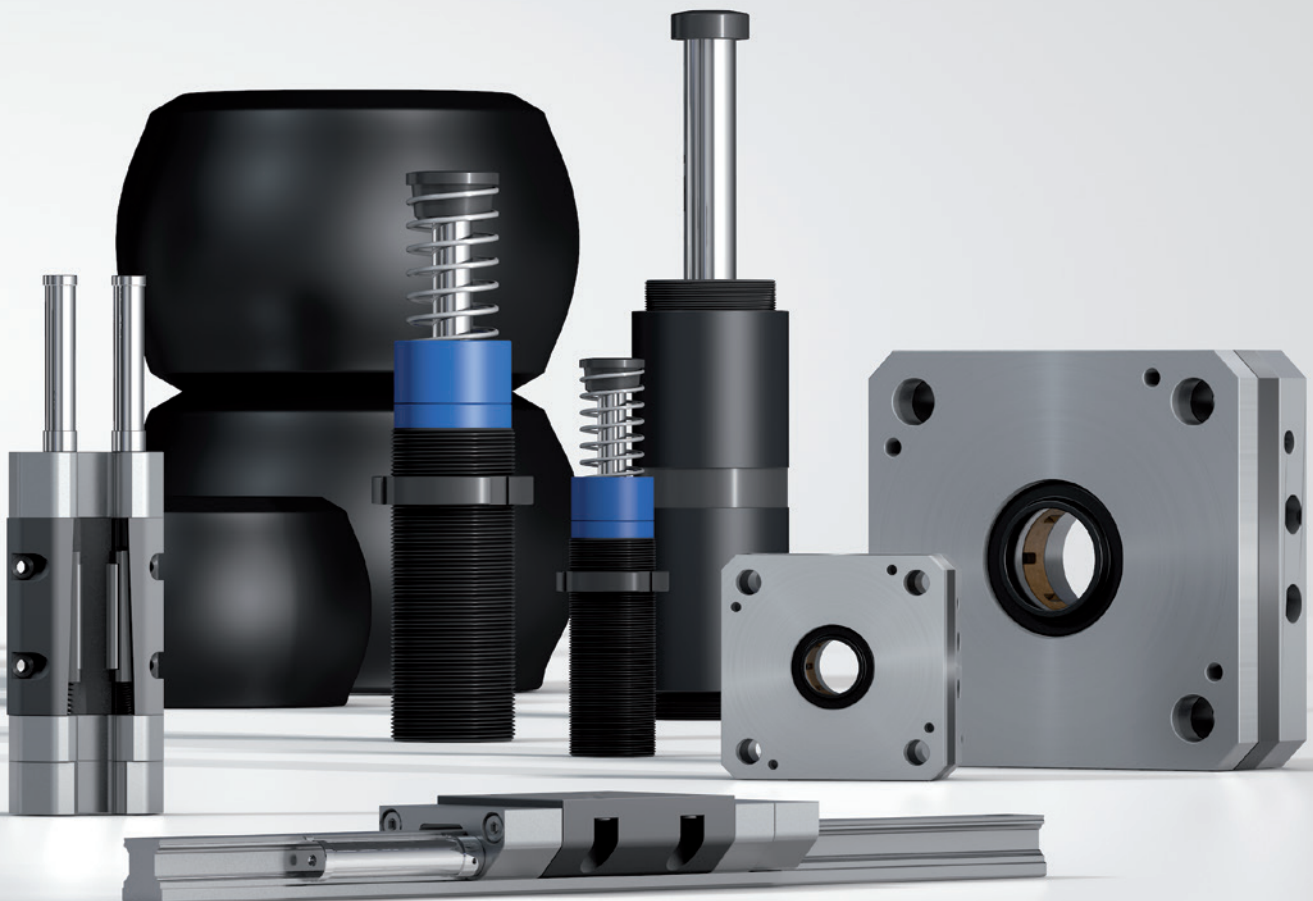
Highest Protection under any Circumstances

任何情况下最高等级的保护

They demonstrate their main advantages in emergency stop situations and, based on the protection they provide, are very cost-effective. Furthermore, they can all be easily integrated in the existing construction designs and largely work independent of energy supplies.

ACE安全产品展示了在紧急停止情况下的主要优势，基于其提供的有效保护，它具有非常高的成本效益。

而且，它们都可以很容易地集成在现有的结构设计中，不需要额外能源供应也可以正常工作。



Safety Shock Absorbers

安全型液压缓冲器

Perfect protection for the worst case scenario
针对最坏状况的完美保护

As a cheaper alternative to the standard shock absorber, Safety shock absorbers are the tried and tested low cost method of preventing those occasional emergency stops. Designed for occasional use, they primarily serve as reliable, effective protection in emergency stopping for construction designs.

作为标准缓冲器更节约成本的替代方案，对于偶尔需要紧急停止的场合，采用安全型液压缓冲器是一种经过实践检验的低成本方法。由于是为应对偶发紧急停止情况，他们对结构设计从根本上提供可靠、有效的保护。



Recommended Application

应用推荐



Application for Stacker system in the Logistic industry
物流行业：完美保护堆垛机系统安全

The maintenance free and read-to-install machine elements are characterized in every respect by the well-known high ACE quality and maximum energy absorption of up to 480,000 Nm/Cycle.

高品质的ACE安全型缓冲器免维护、易安装，每个循环最大能量吸收高达480,000Nm。

Safety shock absorbers from ACE are available in a large choice with strokes of 23 mm to 1,200 mm, and the arrangement of orifice pattern can be calculated and produced specifically to the customer's requirements and depending on the application.

ACE提供的安全型液压缓冲器行程有从23 mm至1200 mm大范围的选择，溢流孔的大小和布置可根据客户要求和应用情况进行计算和生产。

Safety Shock Absorbers

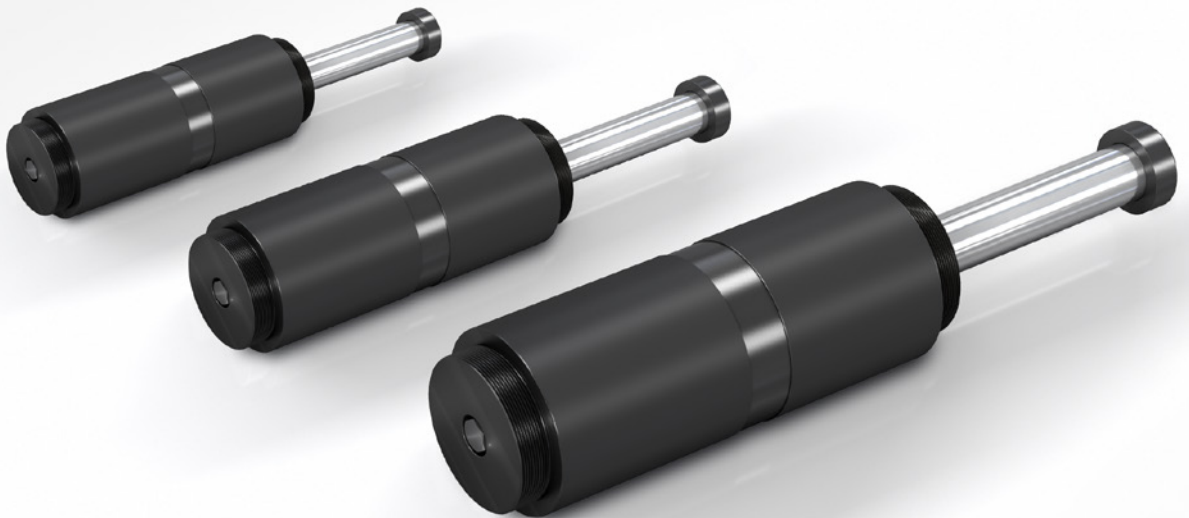
安全型液压缓冲器

Perfect protection for the worst case scenario
针对最坏状况的完美保护

CSS38 to CSS63
CSS38-CSS63系列

High Rack Damper, Optimized Characteristic
Low reaction forces with long strokes
Shelf storage systems, Heavy load applications, Conveyor systems.

大载荷、高优化
长行程、低反作用力
是智能物流系统、重载、输送系统等应用的理想选择

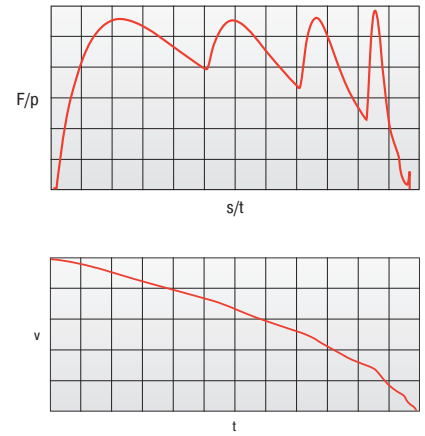
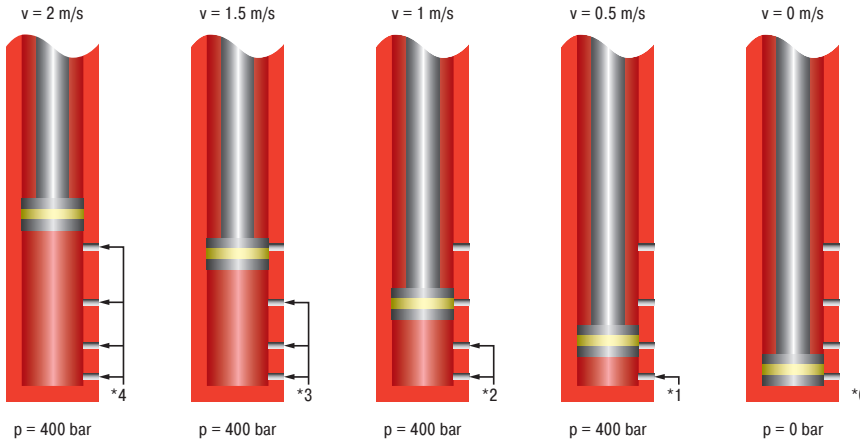


General Function

基本介绍

If a moving mass hits the industrial shock absorber, the piston puts the oil in the pressure chamber into motion. The oil is pressed through the metering orifices, which converts the discharged energy into heat. The metering orifices are arranged on the stroke so that the mass is retarded with a constant damping force. The hydraulic pressure is maintained throughout the entire braking process nearly constant.

当移动的质量撞击缓冲器，活塞会压迫压力室中的油，油通过溢流孔被加压，将排出的能量转化为热量。溢流孔布置在行程上，从而使质量以恒定的阻力减速。在整个制动过程中，液压阻力几乎保持恒定。



* The load velocity reduces continuously as you travel through the stroke due to the reduction in the number of metering orifices (*) in action. The internal pressure remains essentially constant and thus the force vs. stroke curve remains linear.

*随着缓冲行程内溢流孔逐渐关闭，负载运动速度也逐渐降低。缓冲器的内部油压保持恒定，从而阻力对应行程曲线保持线性特征

F = force (N), p = internal pressure (bar)
 s = stroke (m), t = deceleration time (s),
 v = velocity (m/s)
 F = 阻力 (N), p = 内部压力 (bar)
 s = 行程 (m), t = 减速时间 (s),
 v = 速度 (m/s)

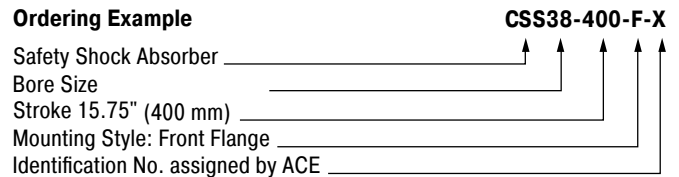
Technical Data

Complete details required when ordering

- Moving load: m (kg)
- Impact velocity range: v (m/s) max.
- Motor power: P (kW)
- Stall torque factor: ST (normal, 2.5)
- (Alternatively: Propelling force F (N))
- Number of absorbers in parallel: n

Please supply the complete details for the calculation and selection of the most suitable damper

Ordering Example



Please provide the way of installation: Vertical/ Horizontal

Please indicate identification no. in case of replacement order

Please contact the factory for complete part number.

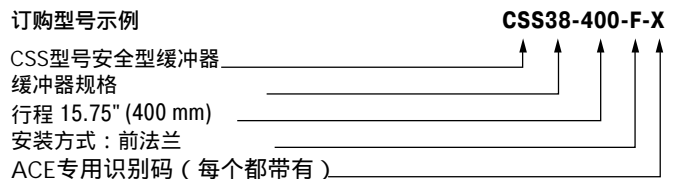
技术参数

订购时需要的完整信息

- 移动负载质量: m (kg)
- 发生撞击时的速度范围: v (m/s) max.
- 电机功率: P (kW)
- 电机扭矩系数: ST (normal, 2.5)
- (或者: 推进力: F (N))
- 平行安装的缓冲器数量: n

为了计算和选型最合适的缓冲器，请提供完整信息。

订购型号示例



请提供安装摆放形式: 垂直/水平

在备件项目中请提供完整的ACE识别码

Please contact the factory for complete part number.

CSS38 to CSS63

CSS38-CSS63系列

Low reaction forces with long strokes

长行程、低反作用力的安全型缓冲器

Energy capacity 4,000 Nm/Cycle to 250,000 Nm/Cycle

Stroke 50 mm to 1,000 mm

最大吸收能量 4,000 Nm/Cycle 至 250,000 Nm/Cycle
行程 50 mm 至 1,000 mm

ACE uses our proprietary custom calculation program to design each shock absorber for the specific customer application. Customization helps reduce the risk of crashes and incorrect product sizing. The characteristic curve or damping characteristics of all safety shock absorbers from ACE are individually designed to the specific customer application. The metering orifices for the applications are specially calculated and produced. These tailor-made machine elements are the ideal protection because they are less expensive than industrial shock absorbers.

ACE通过专用计算软件为具体客户设计每一个缓冲器。这样的定制有助于降低出现产品报废和不合适选型的风险。ACE所有安全型缓冲器的特性曲线或阻尼特性，都是针对客户应用而单独设计的。缓冲器的溢油孔是经过专门计算和制造的。这些量身定制的缓冲器是理想的保护方案，它比使用多个标准的缓冲器更具成本优势



Technical Data

技术参数

Energy capacity: 4,000 Nm/Cycle to 250,000 Nm/Cycle

Impact velocity range: 0.5 m/s to 4.6 m/s. Other speeds on request.

Operating temperature range: -10 °C to +80 °C. Other temperatures on request.

Mounting: Vertical/ Horizontal

Damping medium: Automatic Transmission Fluid (ATF)

On request: Special oils, special flanges etc.

最大吸收能量: 4,000 Nm/Cycle to 250,000 Nm/Cycle

最大撞击速度: 0.5 m/s to 4.6 m/s. 其他速度

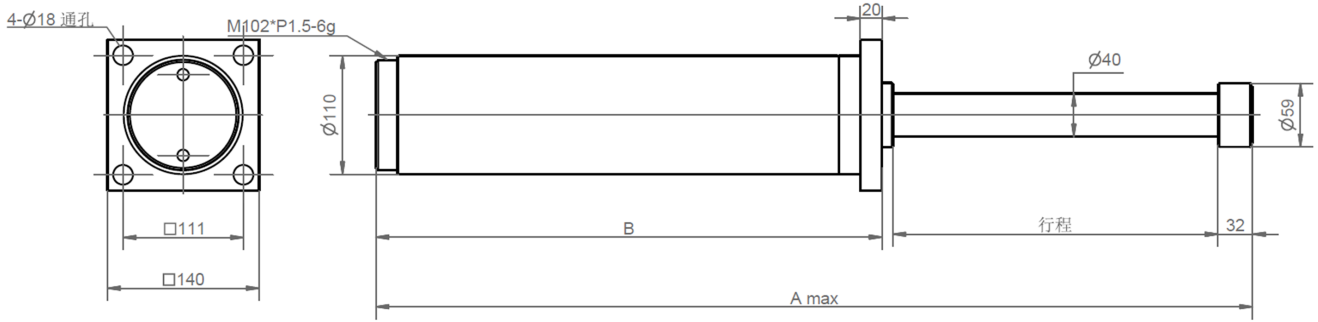
工作温度: -10 °C to 80 °C. 其他特殊温度请咨询ACE

安装方向: 垂直/水平 (如果是垂直, 请咨询ACE)

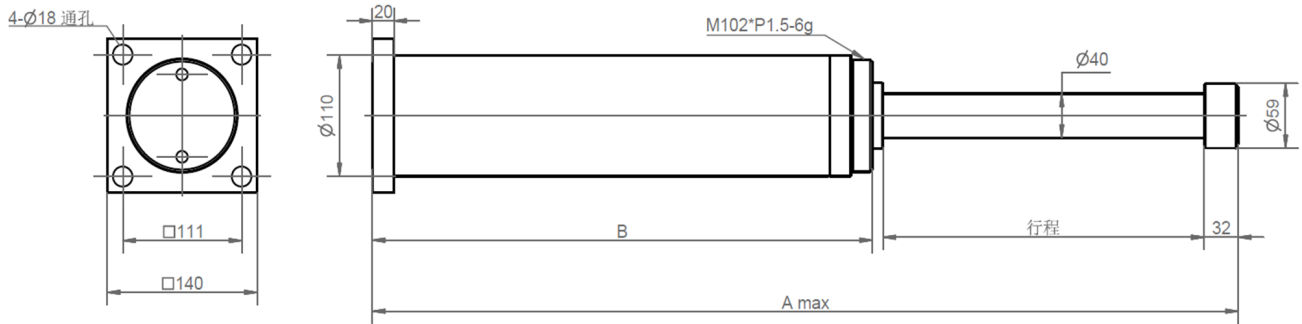
缓冲介质: 自动传动液(ATF)

需咨询ACE : 特殊的液压油, 特殊法兰等

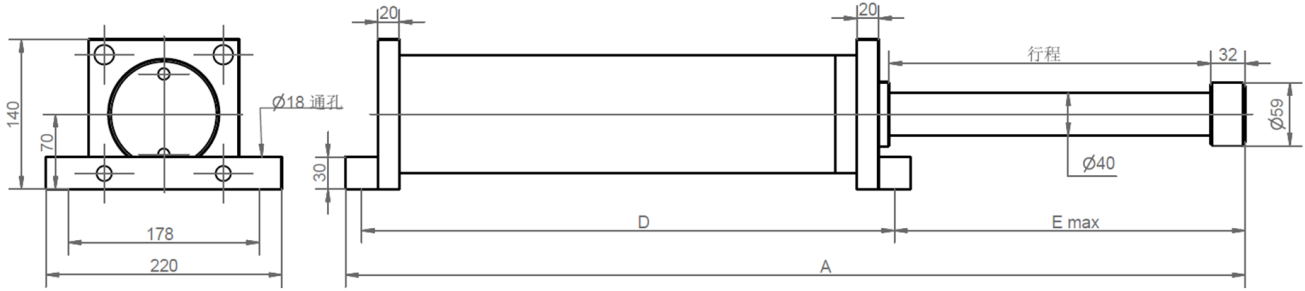
CSS38-F Front Flange 前法兰



CSS38-R Rear Flange 后法兰



CSS38-SS Foot Mount 脚支架



Please supply the complete details for the calculation and selection of the most suitable damper.

为了计算和选型最合适的缓冲器，请提供完整信息。

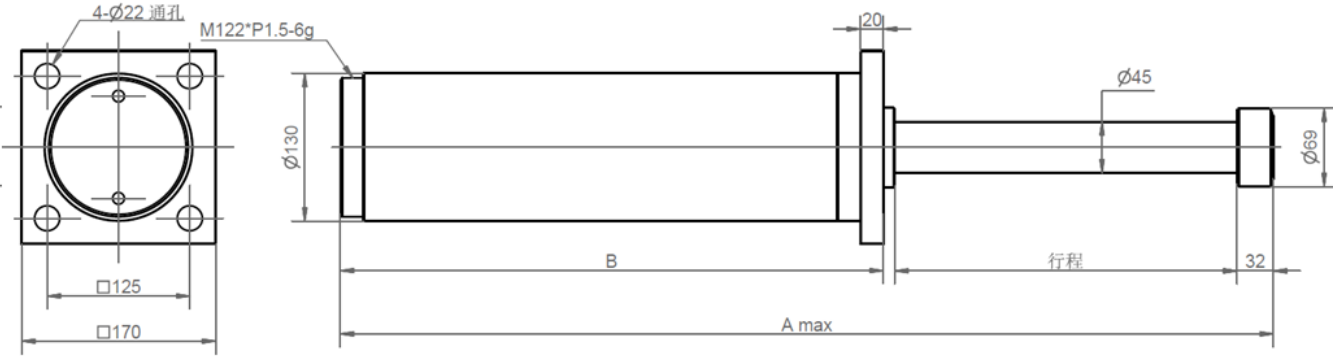
Performance and Dimensions

性能和尺寸

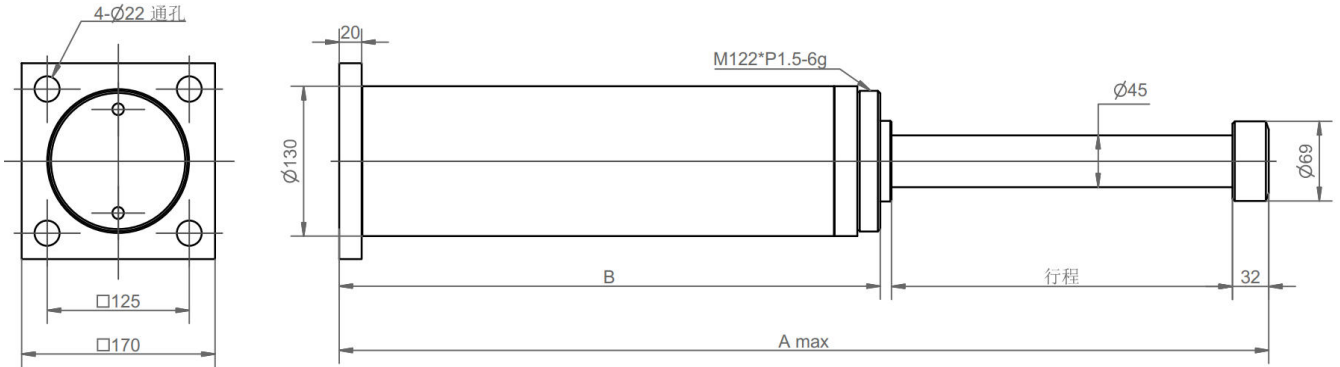
型号 Types	行程 Stroke mm	水平安装 Horizontal installation				垂直安装 Vertical installation				W3 Nm/Cycle	最大反作用力 Maximum reaction force N	最大偏角 Maximum deflection angle °
		A max mm	B mm	D mm	E max mm	A max mm	B mm	D mm	E max mm			
CSS38-50	50	310	218	248	77	310	218	248	77	4000	120000	2.5
CSS38-100	100	409	267	297	127	459	317	347	127	9000	120000	2.5
CSS38-150	150	509	317	347	177	544	352	382	177	14000	120000	2.5
CSS38-200	200	609	367	397	227	659	417	447	227	19000	120000	2.5
CSS38-250	250	709	417	447	277	809	517	547	277	24000	120000	2.5
CSS38-300	300	809	467	497	327	909	567	597	327	28000	120000	2.5
CSS38-350	350	909	517	547	377	1019	627	657	377	33000	120000	2
CSS38-400	400	1009	567	597	427	1129	687	717	427	38000	120000	1.5
CSS38-500	500	1229	687	717	527	1409	867	897	527	48000	120000	1
CSS38-600	600	1449	807	837	627	1629	987	1017	627	57000	120000	1
CSS38-700	700	1669	927	957	727	1849	1107	1137	727	67000	120000	1
CSS38-800	800	1889	1047	1077	827	2129	1287	1317	827	76000	120000	1

Self-Compensating

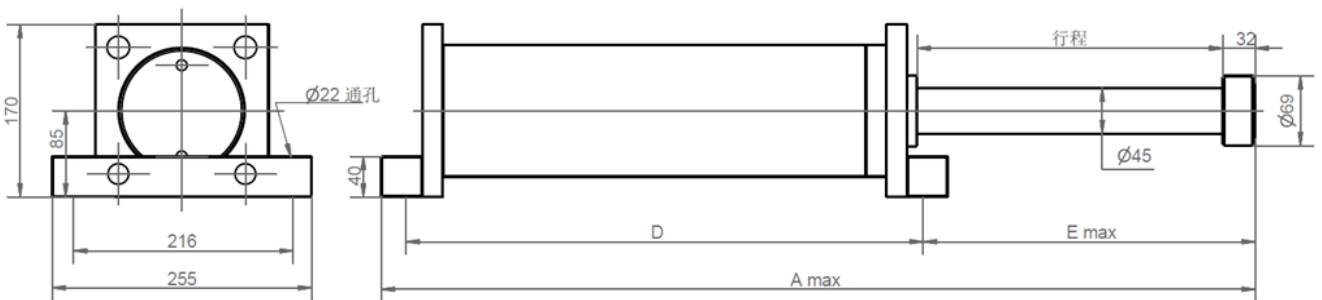
CSS50-F Front Flange 前法兰



CSS50-R Rear Flange 后法兰



CSS50-SS Foot Mount 脚支架



Please supply the complete details for the calculation and selection of the most suitable damper.

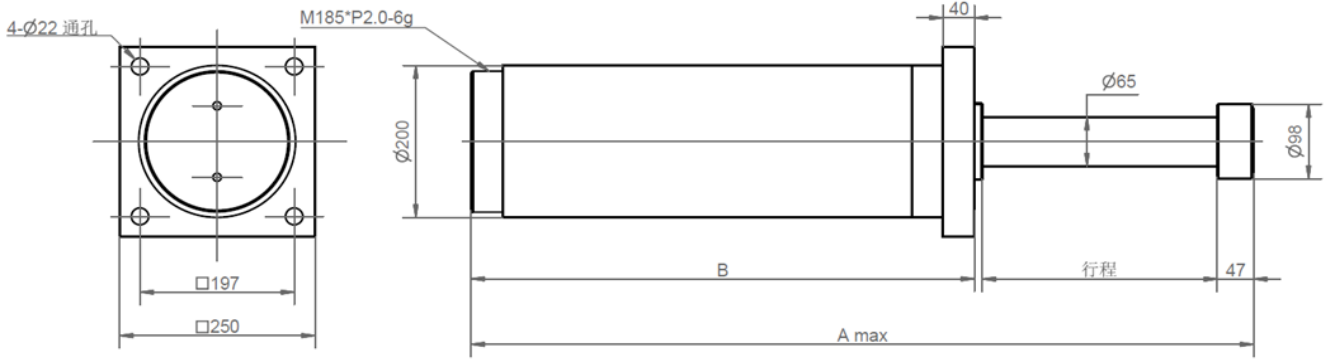
为了计算和选型最合适的缓冲器，请提供完整信息。

Performance and Dimensions

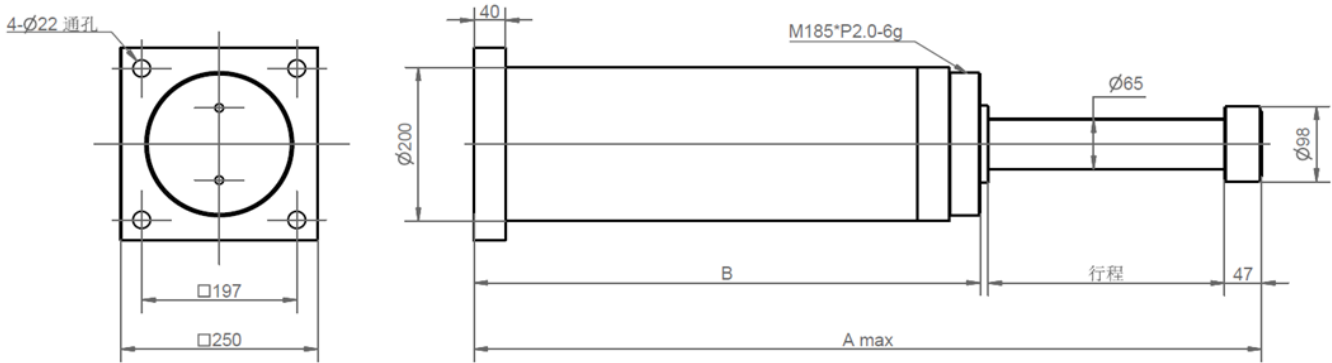
性能和尺寸

型号 Types	行程 Stroke mm	水平安装 Horizontal installation				垂直安装 Vertical installation				W3 Nm/Cycle	最大反作用力 Maximum reaction force N	最大偏心角 Maximum deflection angle °
		A max mm	B mm	D mm	E max mm	A max mm	B mm	D mm	E max mm			
CSS50-100	100	418	276	308	126	418	276	308	126	19200	240000	2
CSS50-150	150	540	348	380	176	540	348	380	176	28800	240000	2
CSS50-200	200	618	376	408	226	718	476	508	226	38400	240000	1.5
CSS50-250	250	718	426	458	276	868	576	608	276	48000	240000	1.5
CSS50-300	300	818	476	508	326	918	576	608	326	57600	240000	1.5
CSS50-350	350	968	576	608	376	1070	678	710	376	67200	240000	1.5
CSS50-400	400	1069	627	659	426	1171	729	761	426	76800	240000	1.5
CSS50-500	500	1271	729	761	526	1474	932	964	526	94000	235000	1.5
CSS50-600	600	1472	830	862	626	1675	1033	1065	626	112800	235000	1
CSS50-700	700	1674	932	964	726	1924	1182	1214	726	136900	230000	1
CSS50-800	800	1875	1033	1065	826	2024	1182	1214	826	134000	195000	1
CSS50-1000	1000	2324	1282	1314	1026	2604	1562	1594	1026	134000	170000	1

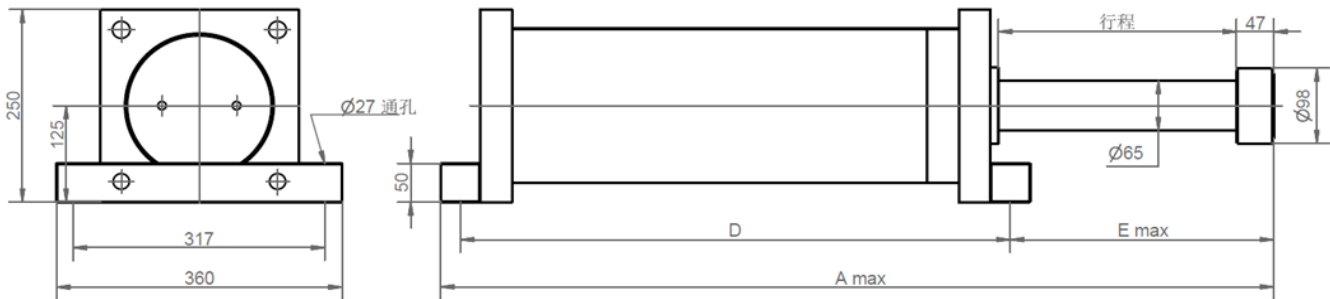
CSS63-F Front Flange 前法兰



CSS63-R Rear Flange 后法兰



CSS63-SS Foot Mount 脚支架



Please supply the complete details for the calculation and selection of the most suitable damper.

为了计算和选型最合适的缓冲器，请提供完整信息。

Performance and Dimensions

性能和尺寸

型号 Types	行程 Stroke mm	水平安装 Horizontal installation				垂直安装 Vertical installation				W3 Nm/Cycle	最大反作用力 Maximum reaction force N	最大偏角° Maximum deflection angle °
		A max mm	B mm	D mm	E max mm	A max mm	B mm	D mm	E max mm			
CSS63-100	100	509	347	397	137	509	347	397	137	31000	360000	1.5
CSS63-150	150	619	407	457	187	619	407	457	187	46500	360000	1.5
CSS63-200	200	734	472	522	237	734	472	522	237	62000	360000	1
CSS63-250	250	844	532	582	287	844	532	582	287	77500	360000	0.5
CSS63-300	300	979	617	667	337	979	617	667	332	93000	360000	0.5
CSS63-400	400	1179	717	767	437	1179	717	767	432	124000	360000	0.5
CSS63-500	500	1384	822	872	537	1384	822	872	537	155000	360000	0.5
CSS63-600	600	1584	922	972	637	1614	952	1002	637	186000	360000	0.5
CSS63-700	700	1784	1022	1072	737	1824	1062	1112	737	217000	360000	0.5
CSS63-800	800	1994	1132	1182	837	2044	1182	1232	837	248000	360000	0.5
CSS63-1000	1000	2394	1332	1382	1037	2494	1432	1482	1037	250000	300000	0.5

General Instructions / 基本说明

Permitted Use

ACE safety shock absorbers are machine elements to brake moving masses in a defined end position in emergency stop situations for axial forces. The safety shock absorbers are not designed for regular operational usage.

Calculation of safety shock absorbers

Please supply the complete details for calculation of the safety shock absorbers.

Deceleration Properties

The orifice sizing and drill pattern in the pressure chamber are individually designed for each safety shock absorber. The respective absorption characteristic is optimized corresponding to the maximum mass that occurs in the emergency stop and the impact speed. Correspondingly, each safety shock absorber is given an individual identification number.

Model Code

For type series CSS38 to CSS63 the identification number is a six digit number. Example: CSS38-400-F-XXXXXX. The factory assigns these identification numbers.

Please contact the factory for complete part number.

Mounting

The mounting of each shock absorber must be exactly positioned so that the reaction force (Q) can be adequately transmitted into the mounting structure.

ACE recommends installation via the front flange -F mounting style that ensures the maximum protection against buckling. The damper must be mounted so that the moving loads are decelerated with the least possible side loading to the piston rod. The maximum permissible side load angles are detailed in our current catalogue.

The entire stroke length must be used for deceleration because only using part of the stroke can lead to overstressing and damage to the unit.

Mounting style front flange



Safety Shock Absorber CSS

Environmental Requirements

The permissible **temperature range** for each shock absorber type can be found in our current catalogue.

Caution: Usage outside the specified temperature range can lead to premature breakdown and damage of the shock absorbers which can then result in severe system damage or machine failures.

Trouble free operation outdoors or in damp environments is only warranted if the dampers are coated with a specific corrosion protection finish.

允许使用

ACE 安全型缓冲器是一种机械装置，在需要紧急停止的情况下，通过轴向力在一个确定末端将运动物体阻拦停止。安全型缓冲器只为紧急停止工况设计，不作其他用途。

安全型缓冲器的计算

请提供完整信息以计算最优的安全型缓冲器。

减速性能

每个缓冲器压力室中的流量孔大小和位置尺寸都是单独设计。我们对缓冲器能量吸收特性做了最优化设计，以应对紧急停止工况下最大化的运动质量和撞击速度。相应的，每个缓冲器都带有一个单独的识别码。

型号编码

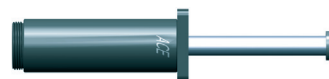
对于 CSS38-CSS63 系列，识别码通常是一串6位数数字。例如：CSS38-400-F-XXXXXX。

识别码由ACE编写，请联系ACE取得完整的产品型号

安装

每个缓冲器的安装位置必须是非常精确的，这样才能保证缓冲器在工作中将反作用力 (Q) 充分的传输到安装机构中。ACE 建议前法兰安装方式，这样能最大化保护设备而缓冲器本体弯曲形变最小。缓冲器应该安装在这样的位置，使运动物体在减速过程对缓冲器活塞杆的侧向冲击最小。关于允许的最大侧向冲击偏心角度，在本产品手册性能参数中已有标明。必须用缓冲器的整个行程来减速，因为如果只用部分行程，会导致超限应力并损坏缓冲器。

安装方式前法兰 -F



安全型缓冲器 CSS 系列

环境要求

缓冲器允许的工作温度范围，在本手册技术参数中已有标明。

警告：在所允许的温度范围外使用缓冲器，会导致其提前失效，并可能带来严重的系统损坏或设备事故。

缓冲器外表只有涂上特殊的防腐蚀涂层，才能保证户外或潮湿环境无忧运转。

General Instructions / 基本说明

Initial Start-Up Checks

First impacts on the shock absorber should only be tried after correctly mounting and with reduced impact speeds and – if possible – with reduced load. Differences between calculated and actual operating data can then be detected early on, and damage to your system can be avoided. If the shock absorbers were selected on calculated data that does not correspond to the maximum possible loading (i.e. selection based on drive power being switched off or at reduced impact speed) then these restricted impact conditions must not be exceeded during initial testing or subsequent use of the system. Otherwise you risk damaging the shock absorbers and/or your machine by overstressing materials. After the initial trial check that the piston rod fully extends again and that there are no signs of oil leakage. Also check that the mounting hardware is still securely tightened. You need to satisfy yourself that no damage has occurred to the piston rod, the body, or the mounting hardware.

Fixed Mechanical Stop

Safety shock absorbers do not need an external stop as a stroke limiter. The stroke of the safety absorber is limited by the stop of the impact head on the shock absorber.

What Needs to be Checked after a Full Load Impact?

Safety shock absorbers that were originally checked only at reduced speed or load need to be checked again after a full load impact (i.e. emergency use) has occurred. Check that the piston rod fully extends to its full out position, that there are no signs of oil leakage and that the mounting hardware is still securely fixed. You need to satisfy yourself that no damage has occurred to the piston rod, the body, or the mounting hardware. If no damage has occurred, the safety shock absorber can be put back into normal operation (see **initial start-up**).

Maintenance

Safety shock absorbers are sealed systems and do not need special maintenance. Safety shock absorbers that are not used regularly (i.e. that are intended for emergency stop systems) should be checked within the normal time frame for safety checks, but **at least once a year**. At this time special attention must be paid to checking that the piston rod resets to its fully extended position, that there is no oil leakage and that the mounting brackets are still secure and undamaged. The piston rod must not show any signs of damage. Safety shock absorbers that are **in use regularly** should be checked **every three months**.

Repair Notice

If any damage to the shock absorber is detected or if there are any doubts as to the proper functioning of the unit please send the unit for service to ACE. Alternatively contact your local ACE office for further advice.

[Detailed information on the above listed points can be taken from the corresponding operating and assembly instructions.](#)

首次启动检查

首次撞击缓冲器，应该检查缓冲器是否安装正确，撞击速度应该比较小，可能的话，首次撞击应降低冲击重量。前期试验缓冲器理论计算和实际操作之间的差距，以避免您的设备系统受损。如果根据理论计算值选择的缓冲器与最大可能负载不对应（例如选择是基于驱动关闭或者减少冲击速度），那么，在前期的测试或者后续的正常使用中都不能超过当初选择的限制条件，否则，超限应力可能会损坏缓冲器或者您的机械设备。在首次测试检查，活塞杆再次完全复位并且不存在漏油迹象后，也需要检查安装支架是否仍然牢固，直到您确信接下来的使用不会对缓冲器活塞杆，本体或者安装支架产生损坏为止。

确定机械停止

安全型缓冲器不需要一个外置的限位装置为行程限位，缓冲器的行程是通过冲击头的停止来限制的。

满负载撞击后应该检查什么？

安全型缓冲器在满负载（例如：紧急情况使用）冲击后需要再一次做减速或者减重量冲击检查。检查活塞杆是否能充分的归位，不能有任何的漏油迹象和安装配件牢固固定，直到您确信接下来的使用不会对活塞杆，产品本体，或者安装机构产生损坏为止。只有这样，安全型缓冲器才能投入到正常的使用中（参见首次启动检查）。

维护

安全型缓冲器是一个密封系统无需特别的维护。安全型缓冲器不是经常使用时（例如：仅仅是为急停系统而准备），应该在规定的时间内做安全检查，至少是一年一次。检查时应特别注意活塞杆是否能完全延伸、紧固如初和完好无缺。活塞杆不能发现有任何的被损坏的迹象，安全型缓冲器如果是经常使用，应该每三个月检查一次。

修复事宜

如果发现缓冲器有任何损坏，或对缓冲器正常功能运转有任何疑问，请及时联系ACE处理。

关于以上各点的详细信息，可以在ACE相应的操作和装配说明中找到。

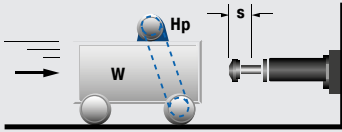
Technical Support

Technical Support

技术支持

Please supply the complete details for the calculation and selection of the most suitable damper.
为了计算和选型最合适的缓冲器，请提供完整信息。

For example: a logistics stacker application
例如：一个物流堆垛机应用



The data we need
我们需要的参数

m	Weight to be decelerated	kg
n	Number of shock absorbers (in parallel)	
v	Velocity at impact	m/s
P	Motor power	kW
ST	Tall torque factor (normally 2.5)	
m	需要缓冲的负载质量	kg
n	平行安装的缓冲器数量	
v	负载冲击速度	m/s
P	电机功率	kW
ST	电机失效转矩系数 (通常 2.5)	

ST = relation between starting torque and running torque of the motor (depending on the design)
ST = 表示马达启动转矩和运行转矩的关系。(依据设计)

For example: m=20,000kg v=2.67m/s
n=1 P=15kW
ST=2.5

According to your data, we will recommend the most suitable safety shock absorber
根据您的参数，我们将推荐最合适的安全型缓冲器

Kinetic energy	W1	71289.0	Nm
Propelling force energy	W2	14044.9	Nm
Total energy / stroke	W3	85333.9	Nm
Capacity		61.0	%
Effective weight	me	23940.3	kg
Total reaction force	Q	102401	N
Deceleration time	t	1.0	s
Total deceleration rate	a	4.3	m/s ²
Impact velocity	v0	2.67	m/s

On this page we would like to present our **free additional** services. We provide these services to assist you from identification of the problem to solution.

Tell us about your requirements.

Take advantage of our more than 50 years of expert knowledge in damping technology. Furthermore: ACE service support and products are available in more than 45 countries worldwide.

这里我们将展示ACE的增值服务。告诉我们您的需求，我们将利用超过50年的专业知识，提供专业的服务帮助您识别问题以及提供完美的技术解决方案，ACE的支持服务和产品在全球多于45个国家都可应用。

Our specialist engineer create detail technical solution for you including assembly suggestions and details on machine loads, brake time and workload ect. The CAD data is also available in all standard formats in 2D and 3D.

ACE专业的工程师将为您提供详细的技术方案，包括安装建议，以及机械负载、减速刹车时间、工作负荷等详情。ACE也为您提供2D和3D数据。

Application Examples

应用案例

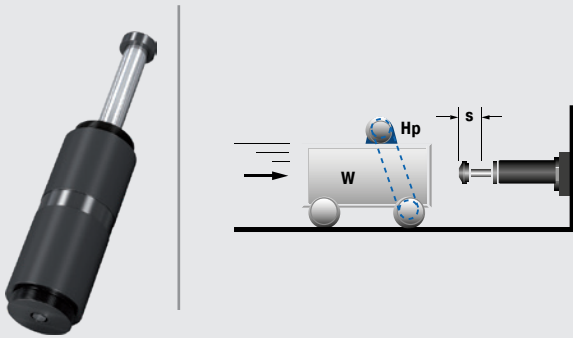
Application in the Logistic industry

ACE safety shock absorbers protect Logistic industry. In case of out of control, the safety shock absorber can be a very good protection for the stacker systems.

ACE安全型缓冲器为物流行业提供保护，堆垛机的速度越来越快，一旦发生失控，安全型缓冲器能很好的保护设备及物料。



Application for Stacker system in the Logistic industry
物流行业：完美保护堆垛机系统安全



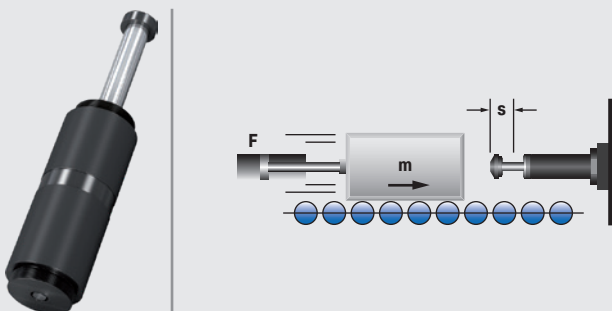
Safe driving to the end positions

The aim was to protect a driving simulation capsule on two of its eight axes. The demands placed on a potential emergency stopper were high because it was clear that its failure would lead to massive damage to the complete construction as well as to the capsule. Two ACE safety shock absorbers now safely contain destructive forces, e.g. during power outages, and eliminate high risks.

作为紧急停止装置的一部分，在八根轴中的两根安装安全型缓冲器以保护驾驶模拟舱。这个紧急停止装置很重要，因为它出故障可能导致整个模拟舱损失惨重，并对实验人员造成伤害。两根ACE安全型缓冲器保护意外情况发生，例如消除断电期间出现的风险。



ACE safety shock absorbers protect end positions in two axes of a driving simulator
Bosch Rexroth BV, Boxtel 5281 RV, The Netherlands
and University of Stuttgart - FKFS, 70569 Stuttgart, Germany



ACE China / Stabilus(Jiangsu) Ltd.
The shortest way to the perfect shock absorber



Stabilus (Jiangsu) Ltd.

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