

HBS-28 to HBS-70 Hydraulic dampers

Free of play linear deceleration

Adjustable, no free travel

Compression and extension force

range 30 N to 40,000 N

Stroke 50 mm to 800 mm

HBS-28

HBS-35

HBS-70

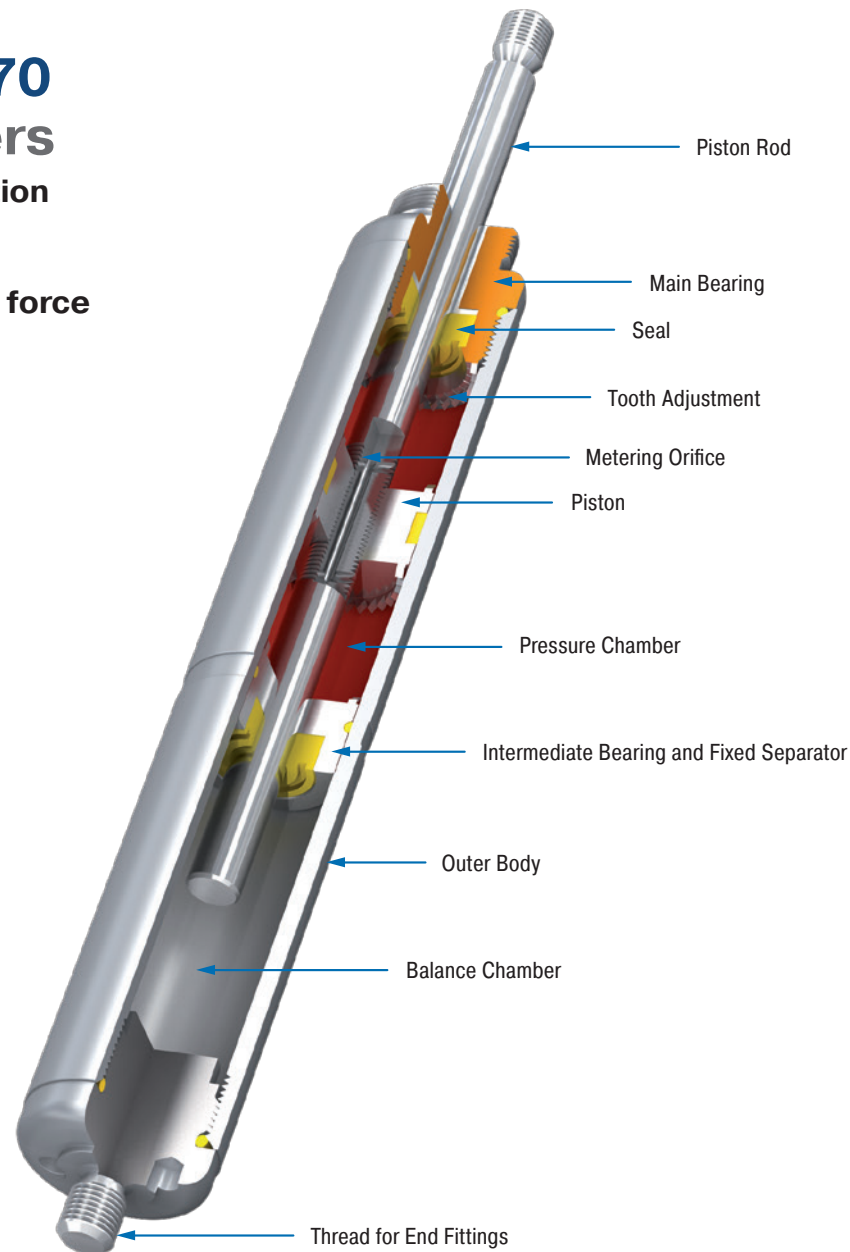


Table of contents	Page
General instructions.....	2
Safety information	2
Intended use.....	2
Description and function.....	2
Calculation and design	2
Delivery and storage	2
Maintenance and care	2
Disassembly and disposal.....	2
Mounting instructions.....	3 - 5
Warranty	6
Expected service life	6
Technical data.....	6

Manual

General instructions

This manual is for the disruption-free use of the product types listed on page 1; its compliance is a prerequisite for the fulfilment of any warranty claims.

Therefore, make sure to read this manual before use.

Please always maintain the specified limits from the performance table (technical data). Take into account the predominant environmental conditions and restrictions. Note the regulations of the trade association, TÜV or corresponding national, international and European regulations. Installation and commissioning only according to mounting instructions.

Safety information

WARNING



If ACE hydraulic dampers are used where a failure of the product could lead to personal injuries and/or material damage, additional safety elements must be implemented.



The flap/mass can fall down during installation of dampers. Secure the flap/mass to be moved against falling down.

Intended use

Hydraulic dampers by ACE are used wherever moving masses are to be subjected to an even, defined speed. The damping is retracting and/or extending.

Description and function

Hydraulic dampers are maintenance-free and ready-to-install. They are available off-the-shelf with a body diameter of 28 mm to 70 mm.

When extending or retracting the piston rod, the hydraulic fluid, located in the cylinder space in front of the piston, is displaced by the piston and pressed through the throttle into the cylinder space behind the piston. The balance is realised by a second piston rod and a balance chamber in order to avoid free travel. The sealing system reliably takes care of the sealing of the chrome-plated piston rod on the outside. In order to adjust the damping, the piston rod is twisted in a completely extended or retracted state and the metering orifice is further opened or closed. The damping is adjusted the same way in both directions with version "P" (damping type on both sides).

The hydraulic damper does not have its own return force and must be guided over the total working stroke in both directions.

The compression and extension force can be found in the performance table.

Calculation and design

In order to ensure an optimum and durable function of the hydraulic damper they must be correctly dimensioned and designed. The following parameters must be known:

- Moving mass
- Feed force
- Feed speed
- Number of strokes or cycles per minute

For the correct sizing, please phone the following number for free advice: +49 (0)2173 - 9226-20.

Regulation instructions for HBS-28 to HBS-70



View in direction of arrow (from front of the piston rod)

Adjustment only possible in **completely** retracted or extended position

1. Hold body.
2. a) With extended piston rod:
Adjustment by twisting the piston rod according to the illustration. During the twisting movement, slightly pull the piston rod so that the piston engages.
- b) With retracted piston rod:
Adjustment by twisting the piston rod. During the twisting movement, slightly push in the piston rod so that the piston engages.
Twist to the right: powerful damping
Twist to the left: weak damping
3. When the twisting resistance is noticeably increased, end the adjustment process!
NOTE: Do not twist by force as otherwise the adjustment segment may become damaged.
4. Check adjustment of damping and, if necessary, repeat steps 1 to 3.
5. On all versions with separator pistons (T) the adjustment is only possible in the extended state.



Weak damping

Twisting to the left
Fast speed

Powerful damping

Twisting to the right
Slow speed

Delivery and storage

- After delivery please check the damper for any damage.
- The hydraulic damper can become damaged if it falls. Carefully remove the product from the packaging.
- Dampers can generally be stored in any position.
- Always store dampers in a dry place in order to avoid oxidation.
- The recommended maximum storage time is 1 year.
- Any protective packaging must be removed before installation.

Maintenance and care

Regularly check the hydraulic dampers for oil loss, function and external damage.

Hydraulic dampers are maintenance-free and ready-to-install. Hydraulic dampers are machine elements that are subject to continuous wear.

Disassembly and disposal

Take account of environmental protection during disposal of the hydraulic dampers.

The corresponding disposal instructions are available on request. You can return the door dampers to ACE for disposal that is free of charge.

Hydraulic dampers HBS are repairable.

Faulty door dampers can be sent to our service department for determination of the cause of failure and for repair.

Mounting instructions and mounting accessories

Installation instructions

Before installation and use check whether the identification number on the hydraulic damper or on the packaging matches the respective designation on the delivery note. Hydraulic dampers are maintenance-free and ready-to-install.

Operating temperature range: -20 °C to +80 °C

Mounting: in any position

Positive stop: External positive stops 1 mm to 1.5 mm before the end of stroke provided by the customer.

Adjustment

Possible by twisting the piston rod to completely extended or retracted state.
Twisting clockwise = increased braking force
Anticlockwise = reduced braking force
Damping force adjustable in fitted condition. The L dimension is extended by maximum 5 mm during adjustment.

WARNING

-  **The flap/mass can fall down during installation of hydraulic dampers.**
Secure the flap/mass to be moved against falling down.
-  **If the temperature exceeds or falls below the maximum or minimum temperature, hydraulic dampers may fail.**
Always maintain temperature range of -20 °C to +80 °C.
-  **Fluids, gases and dirt particles in the surrounding area can attack or destroy the seal system of the hydraulic damper and cause the damper to fail.**
Protect piston rod and seal system from external materials in the environment.
-  **Damage to the piston rod surface can destroy the seal system.**
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.
-  **The piston rod can be torn from the hydraulic damper.**
Ensure a mechanical end stop in tension direction.
-  **Tilting and lateral forces can lead to leaks from the damper or blocking of the piston rod.**
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.
-  **The body tube can become deformed.**
Do not allow any transverse or lateral forces on the hydraulic damper. Do not clamp the body tube.
-  **End fittings can come loose from the hydraulic damper.**
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).
-  **High forces may cause the hydraulic damper to compress or overstretch.**
Apply mechanical stops.

M10x1.25 mounting accessories

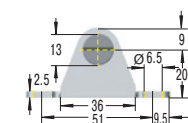
HBS-35

Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

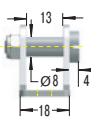
Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

¹ Up to max. 1,800 N

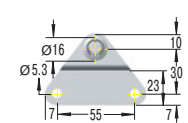


MA10

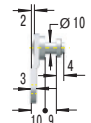


ME10

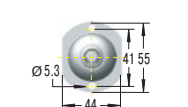
¹ Up to max. 1,200 N



OE10



¹ Up to max. 1,200 N



PE10

¹ Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

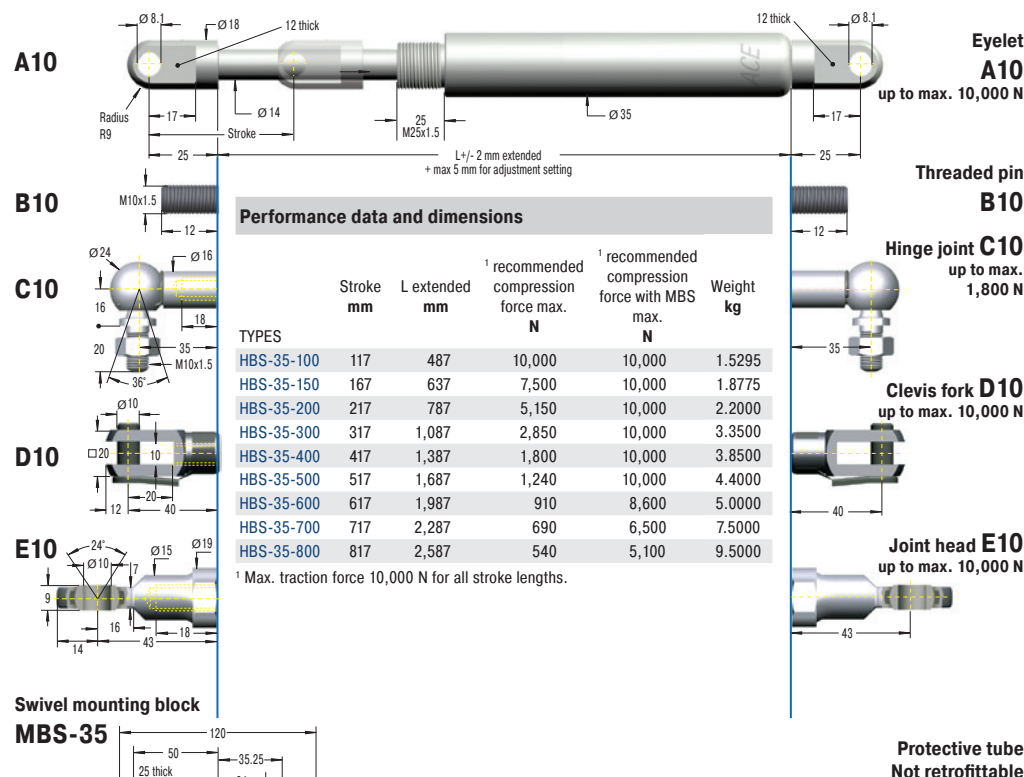
Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner.
Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

Adjustable, no free travel, Compression and extension force range 30 N to 10,000 N

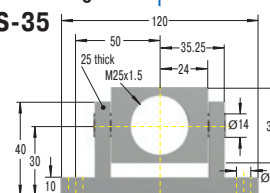
End Fitting

Standard Dimensions



Swivel mounting block

MBS-35



The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Mounting instructions and mounting accessories

Installation instructions

Before installation and use check whether the identification number on the hydraulic damper or on the packaging matches the respective designation on the delivery note. Hydraulic dampers are maintenance-free and ready-to-install.

Operating temperature range: -20 °C to +80 °C

Mounting: in any position

Positive stop: External positive stops 5 mm to 6 mm before the end of stroke provided by the customer.

Adjustment

Possible by twisting the piston rod to completely extended or retracted state.

Twisting clockwise = increased braking force

Anticlockwise = reduced braking force

Damping force adjustable in fitted condition. The L dimension is extended by maximum 5 mm during adjustment.

M24x2 mounting accessories

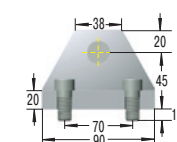
HBS-70

Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

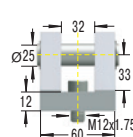
Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

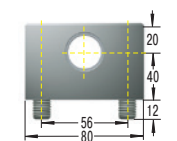
¹ Up to max. 50,000 N



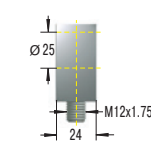
ME24



¹ Up to max. 50,000 N



ND24



¹ Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

Packaging disposal

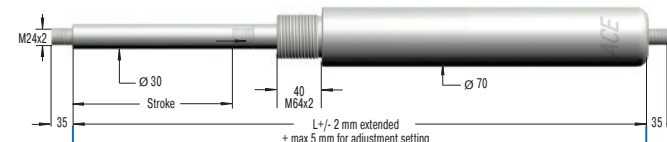
Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

Adjustable, no free travel, Compression and extension force range 2,000 N to 40,000 N

End Fitting

Standard Dimensions

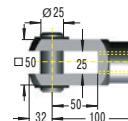
B24



End Fitting

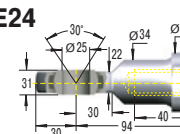
Threaded pin
B24

D24



Clevis fork **D24**
up to max. 50,000 N

E24



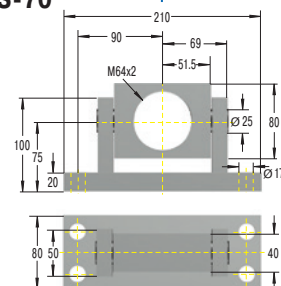
Joint head **E24**
up to max. 50,000 N

Performance data and dimensions

TYPES	Stroke mm	L extended mm	¹ recommended compression force max. N	¹ recommended compression force with MBS max. N	Weight kg
HBS-70-100	111	561	40,000	40,000	8.8
HBS-70-200	211	861	40,000	40,000	11.5
HBS-70-300	311	1,161	40,000	40,000	14.0
HBS-70-400	411	1,461	30,300	40,000	16.0
HBS-70-500	511	1,761	21,600	40,000	18.5
HBS-70-600	611	2,061	16,200	40,000	20.5
HBS-70-700	711	2,361	12,600	40,000	23.0
HBS-70-800	811	2,661	10,100	40,000	25.5

¹ Max. traction force 40,000 N for all stroke lengths.

Swivel mounting block MBS-70



Protective tube
W24-70

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

WARNING

- The flap/mass can fall down during installation of hydraulic dampers.**
Secure the flap/mass to be moved against falling down.
- If the temperature exceeds or falls below the maximum or minimum temperature, hydraulic dampers may fail.**
Always maintain temperature range of -20 °C to +80 °C.
- Fluids, gases and dirt particles in the surrounding area can attack or destroy the seal system of the hydraulic damper and cause the damper to fail.**
Protect piston rod and seal system from external materials in the environment.
- Damage to the piston rod surface can destroy the seal system.**
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.
- The piston rod can be torn from the hydraulic damper.**
Ensure a mechanical end stop in tension direction.
- Tilting and lateral forces can lead to leaks from the damper or blocking of the piston rod.**
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.
- The body tube can become deformed.**
Do not allow any transverse or lateral forces on the hydraulic damper. Do not clamp the body tube.
- End fittings can come loose from the hydraulic damper.**
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).
- High forces may cause the hydraulic damper to compress or overstretch.**
Apply mechanical stops.

Manual

Warranty

Fundamentally, all modifications to the product by third parties lead to exclusion from the warranty.

Obvious defects must be reported to the vendor in writing immediately after delivery, no later than one week, but in any case before processing or installation, otherwise the assertion of a warranty claim is excluded. A timely dispatch is sufficient to keep the term.

The vendor is to be given an opportunity to check on site. If the complaint is justified the vendor offers warranty by repair or replacement at its own discretion. If the rectification fails, the buyer may choose to demand reduction of payment (abatement) or cancellation of the contract (withdrawal). If there is only a minor lack of conformity, particularly with only minor defects, the buyer nevertheless has a right of withdrawal.

If, after failed rectification, the buyer chooses to cancel the contract due to a defect of title or material defect, they are not entitled to additionally claim for damages.

If, after failed fulfilment, the buyer chooses compensation, the goods remain with the buyer, if this is reasonable. The compensation is limited to the difference between the purchase price and the value of the defective item. This does not apply if the vendor maliciously causes the breach of contract.

The quality of the goods is only considered as agreed upon with the product description of the vendor. Public statements, claims or advertising of the manufacturer do not represent an additional contractual specification of quality of the goods.

If the buyer receives defective mounting instructions, the buyer is only obligated to deliver defect-free mounting instructions and only if the defect to the mounting instructions prevents proper mounting.

The warranty period is two years and begins upon completion. Exchange and return of custom products are fundamentally excluded. The factory conditions of the manufacturing factory apply to parts not manufactured and processed by the vendor, which can be viewed by the orderer at the vendor at any time. Construction and installation parts are delivered according to the present standard of engineering.

Expected service life

In general, hydraulic dampers are machine elements that are subject to wear. Wear parts such as seals and pistons are excluded from the general warranty.

The wear of seals is largely dependent upon the operating conditions and the respective application with its operating parameters. In general, the hydraulic damper HBS by ACE is tested over a lifetime of approx. 10,000 complete strokes. Adverse environmental and operating conditions can significantly reduce the expected service life.

Performance data

TYPES	Stroke mm	¹ Compression force min. N	¹ Compression force max. N	Traction force range min. N	Traction force range max. N	¹ Compression force with MBS max. N	Weight kg
HBS-28	50 - 400	30	3,000	30	3,000	2,000 - 3,000	0.64 - 2.2
HBS-35	100 - 800	30	10,000	30	10,000	5,100 - 10,000	1.5295 - 9.5
HBS-70	100 - 800	2,000	40,000	2,000	40,000	40,000	8.8 - 25.5

¹ Depending on stroke, see datasheet of respective range.

Technical data

Compression and extension force: 30 N to 40,000 N

Outer body diameter: Ø 28 mm to Ø 70 mm

Piston rod diameter: Ø 8 mm to Ø 30 mm

Lifetime: approx. 10,000 m

Operating temperature range: -20 °C to +80 °C

Adjustment: Possible by twisting the piston rod to completely extended or retracted state.

Positive stop: External positive stops 1 mm to 1.5 mm (HBS-28 and HBS-35), 5 mm to 6 mm (HBS-70) before the end of stroke provided by the customer.

Damping medium: Hydraulic oil

Material: Outer body: Zinc-plated or coated steel; piston rod: Chrome-plated steel; end fittings: Zinc-plated steel

Mounting: In any position

Application field: Vibration isolation, chairlift damping, fairground rides, cylinder speed control, damping regulation

Note: Increased clamping torque with longer downtimes.

End fittings: Can be combined in any manner and must be secured against twisting by the customer, if necessary.

Safety information: In the case of large strokes with high forces use swivel mounting block MBS.

On request: Special oils and other special options and further accessories are available.