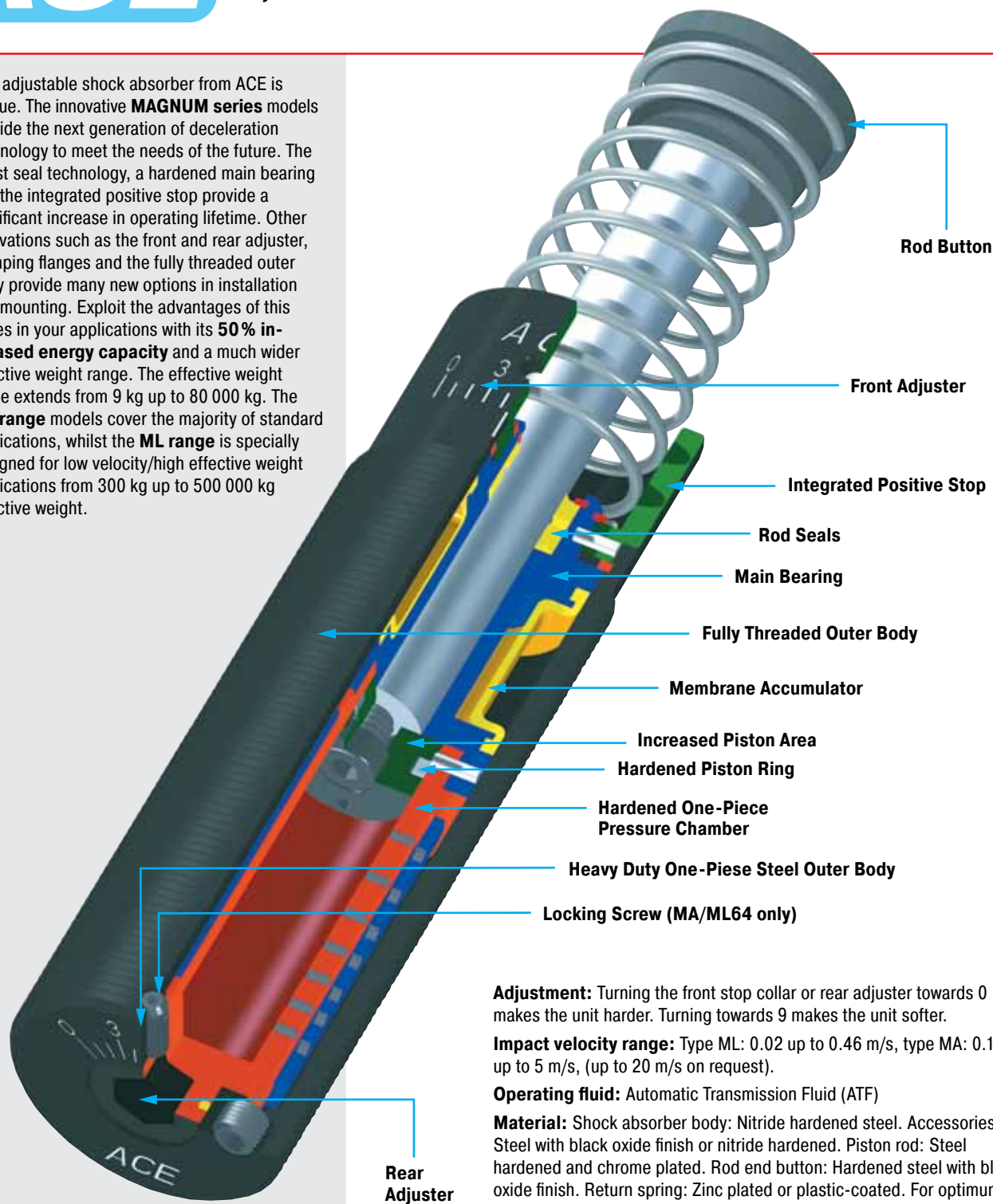


This adjustable shock absorber from ACE is unique. The innovative **MAGNUM series** models provide the next generation of deceleration technology to meet the needs of the future. The latest seal technology, a hardened main bearing and the integrated positive stop provide a significant increase in operating lifetime. Other innovations such as the front and rear adjuster, clamping flanges and the fully threaded outer body provide many new options in installation and mounting. Exploit the advantages of this series in your applications with its **50% increased energy capacity** and a much wider effective weight range. The effective weight range extends from 9 kg up to 80 000 kg. The **MA range** models cover the majority of standard applications, whilst the **ML range** is specially designed for low velocity/high effective weight applications from 300 kg up to 500 000 kg effective weight.



Adjustment: Turning the front stop collar or rear adjuster towards 0 makes the unit harder. Turning towards 9 makes the unit softer.

Impact velocity range: Type ML: 0.02 up to 0.46 m/s, type MA: 0.15 up to 5 m/s, (up to 20 m/s on request).

Operating fluid: Automatic Transmission Fluid (ATF)

Material: Shock absorber body: Nitride hardened steel. Accessories: Steel with black oxide finish or nitride hardened. Piston rod: Steel hardened and chrome plated. Rod end button: Hardened steel with black oxide finish. Return spring: Zinc plated or plastic-coated. For optimum heat dissipation do not paint shock absorber.

Capacity rating: For emergency use only applications it is sometimes possible to exceed the published max. capacity ratings. Please consult ACE for further details. If your application exceeds the tabulated W_4 figures (max. energy per hour Nm/hr) consider additional cooling. Ask ACE for further details.

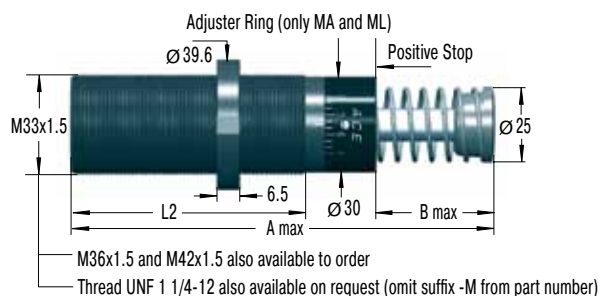
Mounting: In any position

Operating temperature range: -12 °C to 70 °C. Higher and lower temperatures see pages 50 to 51.

On request: Plated finishes. Wearthec finish (seawater resistant), special oils. Mounting inside air cylinders and other special options are available on request.

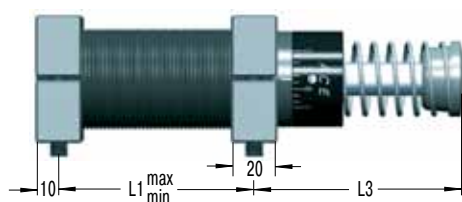
Noise reduction: 3 to 7 dB when using the impact buttons with urethane insert.





Adjuster
(only MA and ML)

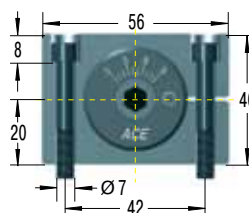
S33



Side Foot Mounting Kit

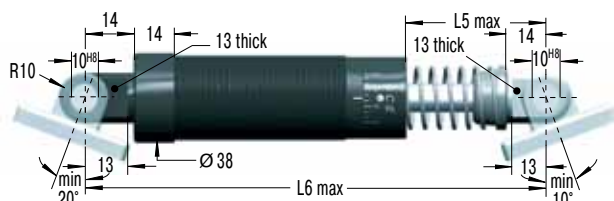
S33 = 2 flanges + 4 screws M6x40, DIN 912

Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.



Tightening torque: 11 Nm
Clamping torque: > 90 Nm

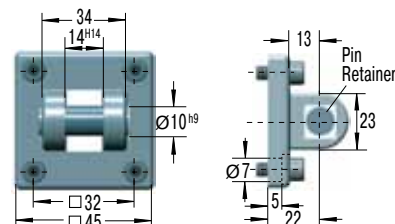
C33



Clevis Mounting Kit

C33 = 2 clevis eyes. Delivered assembled to shock absorber.
Use positive stop at both ends of travel.

SF33



Clevis Flange

SF33 = flange + 4 screws M6x20, DIN 912

Tightening torque: 7.5 Nm

Clamping torque > 50 Nm

Secure with pin or use additional bar. Due to limited force capacity the respective ability should be reviewed by ACE.

Dimensions

Type	¹ Stroke mm	A max	B max	L1 min	L1 max	L2	L3	L5 max	L6 max
MC, MA, ML3325EUM	25	138	23	25	60	83	68	39	168
MC, MA, ML3350EUM	50	189	48.5	32	86	108	93	64	218

¹ Nominal stroke length (without integral stop collar fitted).

Capacity Chart MC33

Type Self-Compensating	Max. Energy Capacity				¹ Effective Weight me					Min. Return Force N	Max. Return Force N	Rod Reset Time s	Max. Side Load Angle °	Weight kg	
	² W ₃ Nm/Cycle	Self-Contained Nm/h	W ₄ with Air/Oil Tank Nm/h	W ₄ with Oil Recir- culation Nm/h	Soft										Hard
					-0 min. max. kg	-1 min. max. kg	-2 min. max. kg	-3 min. max. kg	-4 min. max. kg						
MC3325EUM	155	75 000	124 000	169 000	3 - 11	9 - 40	30 - 120	100 - 420	350 - 1 420	45	90	0.03	4	0.45	
MC3350EUM	310	85 000	135 000	180 000	5 - 22	18 - 70	60 - 250	210 - 840	710 - 2 830	45	135	0.06	3	0.54	

Capacity Chart MA/ML33

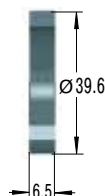
Type Adjustable	Max. Energy Capacity				1 Effective Weight me				Min. Return Force N	Max. Return Force N	Rod Reset Time s	Max. Side Load Angle °	Weight kg
	2 W3 Nm/Cycle	W4 Self-Con- tained Nm/h	W4 with Air/Oil Tank Nm/h	W4 with Oil Recir- culation Nm/h	Soft								
					min.	max.	min.	max.					
MA3325EUM	170	75 000	124 000	169 000	9	- 1 700			45	90	0.03	4	0.45
ML3325EUM	170	75 000	124 000	169 000	300	- 50 000			45	90	0.03	4	0.45
MA3350EUM	340	85 000	135 000	180 000	13	- 2 500			45	135	0.06	3	0.54
ML3350EUM	340	85 000	135 000	180 000	500	- 80 000			45	135	0.06	3	0.66

¹ The effective weight range limits can be raised or lowered to special order.

² For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details. Specifications relate to the effective stroke length (B max).

M33x1.5

NM33



Locking Ring

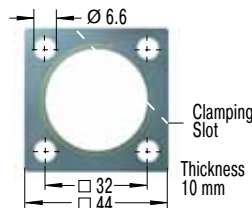
PP33



Poly Button

Optional button with elastomer insert for noise suppression. Option supplied ready mounted onto the shock absorber.

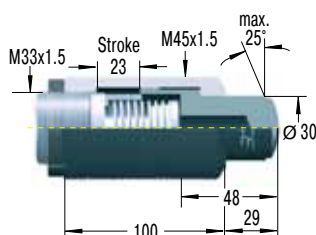
QF33



Square Flange

Install with 4 machine screws
Tightening torque: 11 Nm
Clamping torque: > 90 Nm

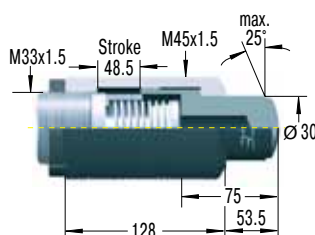
BV3325



Side Load Adaptor

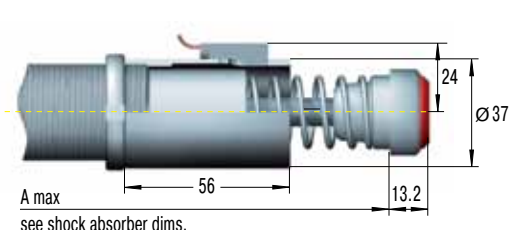
Mounting, installation etc. see pages 38 to 39 and 54.

BV3350



Side Load Adaptor

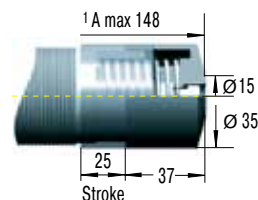
AS33



Switch Stop Collar

inc. Proximity Switch and Poly Button with elastomer insert

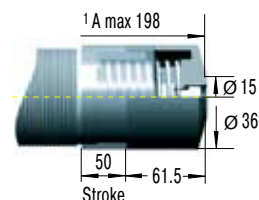
PB3325



Steel Shroud

Mounting, installation etc. see page 54.

PB3350



Steel Shroud

¹ Total installation length of the shock absorber inc. steel shroud

Ordering Example

Self-Compensating _____
Thread Size M33 _____
Stroke 25 mm _____
EU Compliant _____
Metric Thread _____
(omitted when using thread UNF 1 1/4-12)
Effective Weight Range Version _____

MC3325EUM-1

Model Type Prefix

Standard Models

Self-Contained with Return Spring

MC Self-Compensating
MA Adjustable
ML Adjustable, for lower impact velocity

Special Models

Air/Oil Return without Return Spring

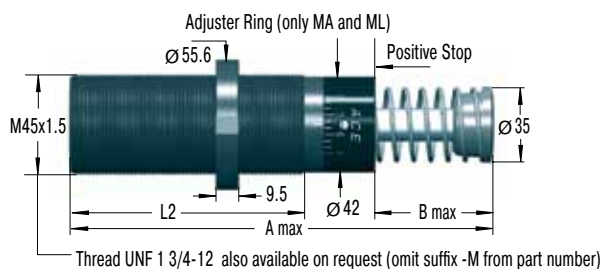
MCA, MAA, MLA

Air/Oil Return with Return Spring

MCS, MAS, MLS

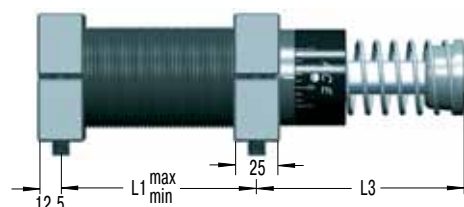
Self-Contained without Return Spring

MCN, MAN, MLN



Adjuster
(only MA and ML)

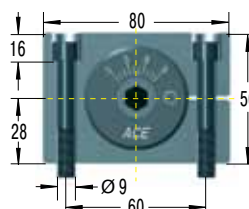
S45



Side Foot Mounting Kit

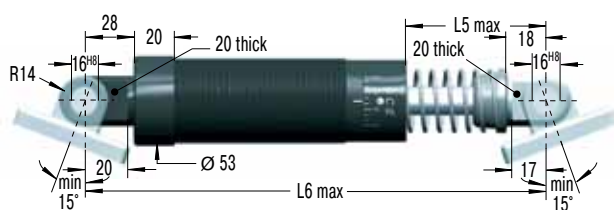
S45 = 2 flanges + 4 screws M8x50, DIN 912

Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.



Tightening torque: 27 Nm
Clamping torque: > 350 Nm

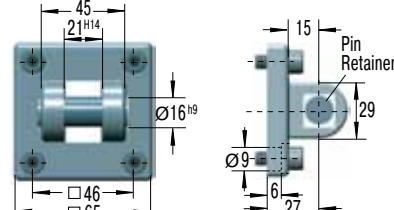
C45



Clevis Mounting Kit

C45 = 2 clevis eyes. Delivered assembled to shock absorber.
Use positive stop at both ends of travel.

SF45



Clevis Flange

SF45 = flange + 4 screws M8x20, DIN 912

Tightening torque: 7.5 Nm

Clamping torque: > 140 Nm

Secure with pin or use additional bar. Due to limited force capacity the respective ability should be reviewed by ACE.

Dimensions

Type	¹ Stroke mm	A max	B max	L1 min	L1 max	L2	L3	L5 max	L6 max
MC, MA, ML4525EUM	25	145	23	32	66	95	66	43	200
MC, MA, ML4550EUM	50	195	48.5	40	92	120	91	68	250
MC, MA4575EUM	75	246	74	50	118	145	116	93	301

¹ Nominal stroke length (without integral stop collar fitted).

Capacity Chart MC45

Type Self-Compensating	Max. Energy Capacity				1 Effective Weight me					Min. Return Force N	Max. Return Force N	Rod Reset Time s	Max. Side Load Angle °	Weight kg
	2 W3 Nm/Cycle	W4 Self-Contained Nm/h	W4 with Air/Oil Tank Nm/h	W4 with Oil Recir- culation Nm/h	Soft		Hard							
					-0	-1	-2	-3	-4					
					min. max. kg	min. max. kg	min. max. kg	min. max. kg	min. max. kg					
MC4525EUM	340	107 000	158 000	192 000	7 - 27	20 - 90	80 - 310	260 - 1 050	890 - 3 540	70	100	0.03	4	1.13
MC4550EUM	680	112 000	192 000	248 000	13 - 54	45 - 180	150 - 620	520 - 2 090	1 800 - 7 100	70	145	0.08	3	1.36
MC4575EUM	1020	146 000	22 5000	282 000	20 - 80	70 - 270	230 - 930	790 - 3 140	2 650 - 10 600	50	180	0.11	2	1.59

Capacity Chart MA/ML45

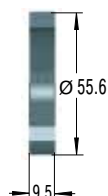
Type	Max. Energy Capacity				1 Effective Weight me			Min. Return Force N	Max. Return Force N	Rod Reset Time s	Max. Side Load Angle °	Weight kg
	2 W3 Nm/Cycle	W4 Self-Contained Nm/h	W4 with Air/Oil Tank Nm/h	W4 with Oil Recir- culation Nm/h								
Adjustable					min.	max.						
					kg							
MA4525EUM	390	107 000	158 000	192 000	40	-	10 000	70	100	0.03	4	1.14
ML4525EUM	390	107 000	158 000	192 000	3 000	-	110 000	70	100	0.03	4	1.13
MA4550EUM	780	112 000	192 000	248 000	70	-	14 500	70	145	0.08	3	1.36
ML4550EUM	780	112 000	192 000	248 000	5 000	-	180 000	70	145	0.08	3	1.36
MA4575EUM	1 170	146 000	225 000	282 000	70	-	15 000	50	180	0.11	2	1.59

¹ The effective weight range limits can be raised or lowered to special order.

² For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details. Specifications relate to the effective stroke length (B max).

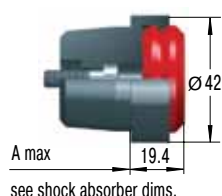
M45x1.5

NM45



Locking Ring

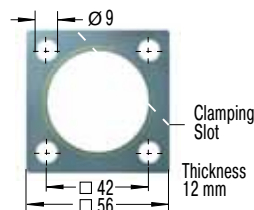
PP45



Poly Button

Optional button with elastomer insert for noise suppression. Option supplied ready mounted onto the shock absorber.

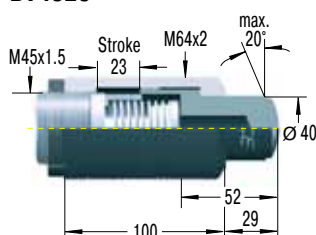
QF45



Square Flange

Install with 4 machine screws
Tightening torque: 27 Nm
Clamping torque: > 200 Nm

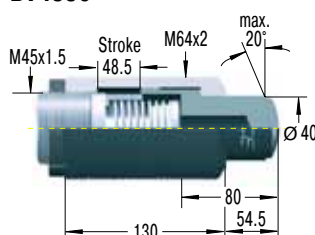
BV4525



Side Load Adaptor

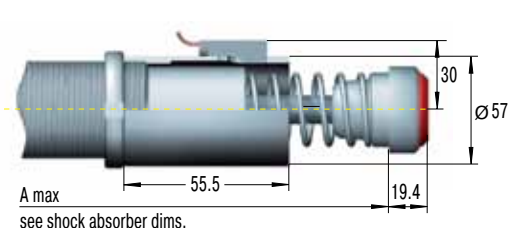
Mounting, installation etc. see pages 38 to 39 and 54.

BV4550



Side Load Adaptor

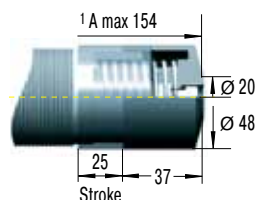
AS45



Switch Stop Collar

inc. Proximity Switch and Poly Button with elastomer insert

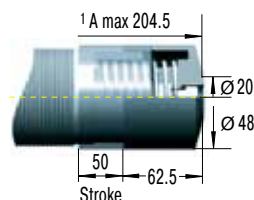
PB4525



Steel Shroud

Mounting, installation etc. see page 54.

PB4550



Steel Shroud

¹ Total installation length of the shock absorber inc. steel shroud

Ordering Example

Adjustable _____
Thread Size M45 _____
Stroke 25 mm _____
EU Compliant _____
Metric Thread _____
(omitted when using thread UNF 1 3/4-12)

ML4525EUM

Model Type Prefix

Standard Models

Self-Contained with Return Spring

MC Self-Compensating
MA Adjustable
ML Adjustable, for lower impact velocity

Special Models

Air/Oil Return without Return Spring

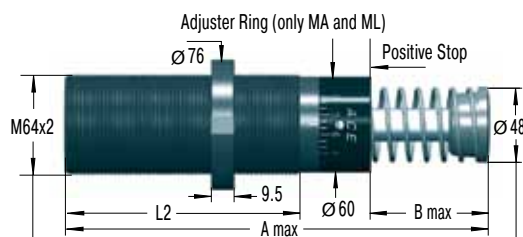
MCA, MAA, MLA

Air/Oil Return with Return Spring

MCS, MAS, MLS

Self-Contained without Return Spring

MCN, MAN, MLN



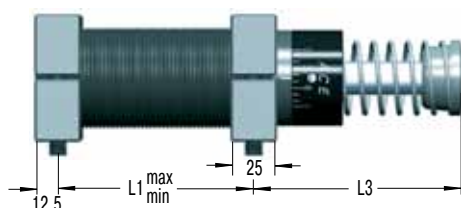
Thread UNF 2 1/2-12 also available on request (omit suffix -M from part number)

Note: 150 mm stroke model does not include stop collar and positive stop is provided by the rod button (Ø 60 mm)



Adjuster
(only MA and ML)

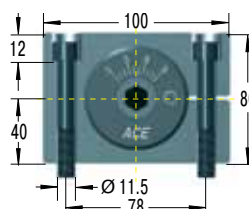
S64



Side Foot Mounting Kit

S64 = 2 flanges + 4 screws M10x80, DIN 912

Because of the thread pitch the fixing holes for the second foot mount should only be drilled and tapped after the first foot mount has been fixed in position.



Tightening torque: 50 Nm
Clamping torque: > 350 Nm

C64



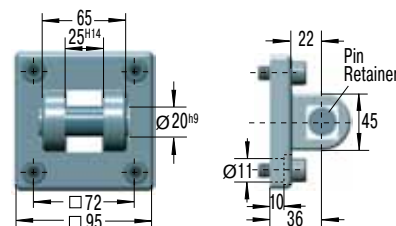
Clevis Mounting Kit

C64 = 2 clevis eyes. Delivered assembled to shock absorber.

¹ with 150 mm stroke Dia. 60 mm. Order C64-150.

Use positive stop at both ends of travel.

SF64



Clevis Flange

SF64 = flange + 4 screws M10x20, DIN 912

Tightening torque: 15 Nm

Clamping torque: > 200 Nm

Secure with pin or use additional bar. Due to limited force capacity the respective ability should be reviewed by ACE.

Dimensions

Type	¹ Stroke mm	A max	B max	L1 min	L1 max	L2	L3	L5 max	L6 max
ML6425EUM	25	174	23	40	86	114	75.5	60	260
MC, MA, ML6450EUM	50	225	48.5	50	112	140	100	85	310
MC, MA64100EUM	100	326	99.5	64	162	191	152	136	410
MC, MA64150EUM	150	450	150	80	212	241	226	187	530

¹ Nominal stroke length (without integral stop collar fitted).

Capacity Chart MC64

Type Self-Compensating	Max. Energy Capacity				¹ Effective Weight me					Min. Return Force N	Max. Return Force N	Rod Reset Time s	Max. Side Load Angle °	Weight kg	
	² W ₃ Nm/Cycle	W ₄ Self-Contained Nm/h	W ₄ with Air/Oil Tank Nm/h	W ₄ with Oil Recirculation Nm/h	Soft										Hard
					-0 min. max. kg	-1 min. max. kg	-2 min. max. kg	-3 min. max. kg	-4 min. max. kg						
MC6450EUM	1 700	146 000	293 000	384 000	35 - 140	140 - 540	460 - 1 850	1 600 - 6 300	5 300 - 21 200	90	155	0.12	4	2.9	
MC64100EUM	3 400	192 000	384 000	497 000	70 - 280	270 - 1 100	930 - 3 700	3 150 - 12 600	10 600 - 42 500	105	270	0.34	3	3.7	
MC64150EUM	5 100	248 000	497 000	644 000	100 - 460	410 - 1 640	1 390 - 5 600	4 700 - 18 800	16 000 - 63 700	75	365	0.48	2	5.1	

Capacity Chart MA/ML64

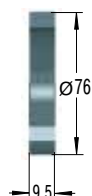
Type Adjustable	Max. Energy Capacity				1 Effective Weight me		Min. Return Force N	Max. Return Force N	Rod Reset Time s	Max. Side Load Angle °	Weight kg
	2 W3 Nm/Cycle	W4 Self-Contained Nm/h	W4 with Air/Oil Tank Nm/h	W4 with Oil Recir- culation Nm/h	Soft						
					min.	max.					
ML6425EUM	1 020	124 000	248 000	332 000	7 000	- 300 000	120	155	0.06	5	2.5
MA6450EUM	2 040	146 000	293 000	384 000	220	- 50 000	90	155	0.12	4	2.9
ML6450EUM	2 040	146 000	293 000	384 000	11 000	- 500 000	90	155	0.12	4	2.9
MA64100EUM	4 080	192 000	384 000	497 000	270	- 52 000	105	270	0.34	3	3.7
MA64150EUM	6 120	248 000	497 000	644 000	330	- 80 000	75	365	0.48	2	5.1

¹ The effective weight range limits can be raised or lowered to special order.

² For emergency use only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details. Specifications relate to the effective stroke length (B max).

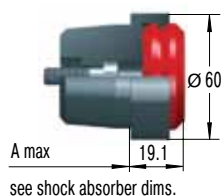
M64x2

NM64



Locking Ring

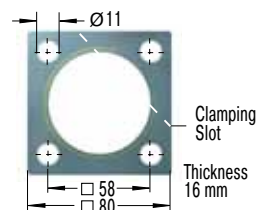
PP64



Poly Button

Optional button with elastomer insert for noise suppression. Option supplied ready mounted onto the shock absorber.

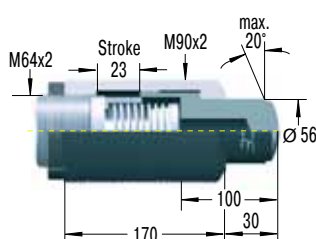
QF64



Square Flange

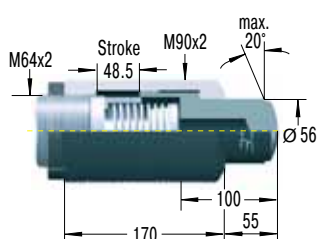
Install with 4 machine screws
Tightening torque: 50 Nm
Clamping torque: > 210 Nm

BV6425



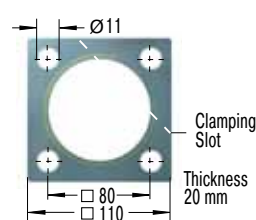
Side Load Adaptor

BV6450



Side Load Adaptor

QF90

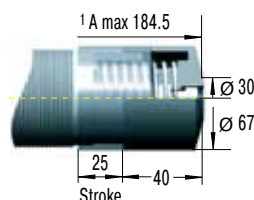


Square Flange

Install with 4 machine screws
Tightening torque: 50 Nm
Clamping torque: > 210 Nm

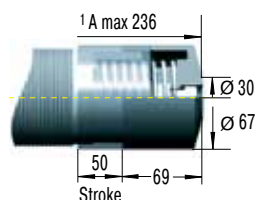
Mounting, installation etc. see pages 38 and 54.

PB6425



Steel Shroud

PB6450



Steel Shroud

¹ Total installation length of the shock absorber inc. steel shroud

Mounting, installation etc. see page 54.

Ordering Example

Adjustable _____
Thread Size M64 _____
Stroke 50 mm _____
EU Compliant _____
Metric Thread _____
(omitted when using thread UNF 2 1/2-12)

MA6450EUM

Model Type Prefix

Standard Models

Self-Contained with Return Spring

MC Self-Compensating
MA Adjustable
ML Adjustable, for lower impact velocity

Special Models

Air/Oil Return without Return Spring

MCA, MAA, MLA

Air/Oil Return with Return Spring

MCS, MAS, MLS

Self-Contained without Return Spring

MCN, MAN, MLN