Test values for shock absorbers

Designation	Part no.	Color code (on housing for front shock absorber, on lower suspension eye for rear shock absorber)	Adjustment in N at 100/min and 50 mm stroke for new or exchange shock absorber		Check of oil reserve in shock absorber	
					Piston rod exposure „a" [3]	
					Adjustments for new shock absorbers	Max. perm. values
			Extension	Compression	mm	mm
Front shock absorbers						
Gas pressure shock absorber **with** separating piston[4]						
Bilstein	107 323 00 00 [1]	4 lengthwise lines, green	1050	520	8 ± 2	38
	107 323 01 00 [2]	4 lengthwise lines, green	1080	550		
	115 323 10 00 [6]	1 lengthwise line, red	760	400		
	115 323 11 00	2 lengthwise lines, red	1020	390		
F & S	107 323 04 00	4 crosswise lines, green	1080	550		
	115 323 25 00 [3]	1 crosswise line, red	760	400		
	115 323 26 00 [3]	2 crosswise lines, red	1020	390		
Gas pressure shock absorber **without** separating piston[5]						
F & S	107 323 02 00 [1]	4 crosswise lines, green	1180	600	22 ± 2	0
	107 323 03 00 [2]	4 crosswise lines, green	1100	670		
	115 323 13 00 [1]	1 crosswise line, red	900	440		
	115 323 14 00 [1]	2 crosswise lines, red	1050	490		
	115 323 17 00 [2]	1 crosswise line, red	870	490		
	115 323 20 00 [3]					
	115 323 18 00 [2]	2 crosswise lines, red	1150	500		
	115 323 21 00 [3]					
Boge	115 323 23 00	1 slanted line, red	770	390	14 ± 2	0

[1] 1st version
[2] 2nd version
[3] 3rd version
[4] After exceeding max. exposed piston rod value the shock absorber is losing in effect.
[5] After falling below max. exposed piston rod value the shock absorber loses in effect.
[6] Standard version model 107.026.

Test values for shock absorbers

Designation	Part no.	Color code (on housing for front shock absorber, on lower suspension eye for rear shock absorber)	Adjustment in N at 100/min and 50 mm stroke for new or exchange shock absorber		Check of oil reserve in shock absorber	
					Piston rod exposure „a" [3]	
					Adjustments for new shock absorbers	Max. perm. values
			Extension	Compression	mm	mm

Rear shock absorbers

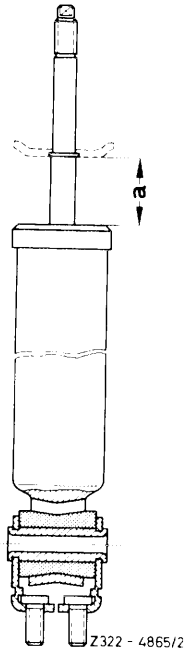
Gas pressure shock absorber **with** separating piston[4]

Bilstein	107 326 00 00	4 lengthwise lines, green	1800	1050	0 + 2	32
	115 326 14 00 [1]	1 lengthwise line, red	1780	1000		
	115 326 15 00	2 lengthwise lines, red	2450	1100		
	115 326 21 00 [2]	1 lengthwise line, red	1760	1120		
	116 326 02 00	1 lengthwise line, green	2350	1070		
	123 326 06 00 [4]	1 lengthwise line, white	1800	1050		
F & S	115 326 29 00	1 crosswise line, red	1760	1120		
	115 326 30 00	2 crosswise lines, red	2700	1200		
	123 326 16 00 [6]	1 crosswise line, white	1800	1050		
	126 326 09 00	1 crosswise line, blue	2370	980		

Gas pressure shock absorber **without** separating piston[5]

F & S	115 326 17 00 [1]	1 crosswise line, red	1760	1020	105 ± 2	82
	115 326 18 00 [1]	2 crosswise lines, red	2700	1160		
	115 326 19 00 [2]	1 crosswise line, red	1720	1200		
	115 326 25 00 [3]					
	115 326 20 00 [2]	2 crosswise lines, red	2450	1220		
	115 326 26 00 [3]					
	116 326 04 00 [1]	1 crosswise line, green	2300	1100		
	116 326 08 00 [2]	1 crosswise line, green	2500	1150		
	116 326 10 00 [3]	1 crosswise line, green	2450	1180		
Boge	115 326 28 00	1 slanted line, red	1780	1100	147 ± 2	137

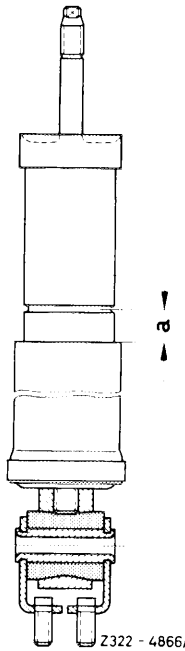
[1] 1st version
[2] 2nd version
[3] 3rd version
[4] After exceeding max. exposed piston rod value the shock absorber is losing in effect.
[5] After falling below max. exposed piston rod value the shock absorber loses in effect.
[6] Standard version model 107.026.



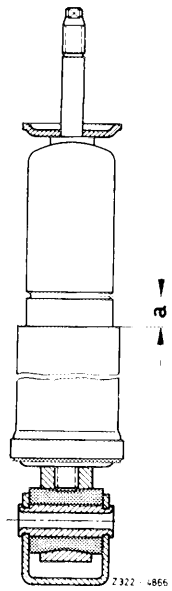
Front shock absorbers

a Length of exposed piston rod

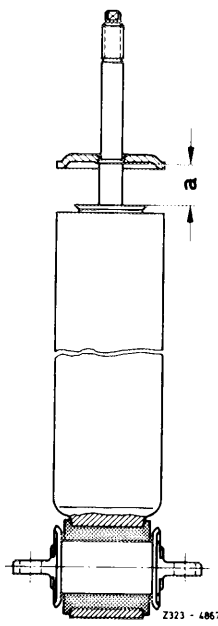
Bilstein
F & S (starting 11.1980)
with separating piston

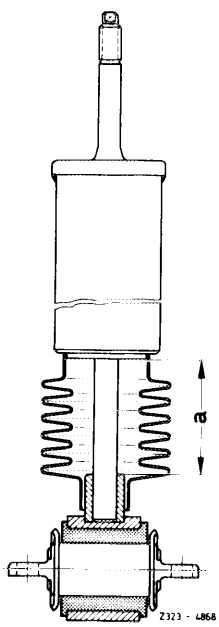


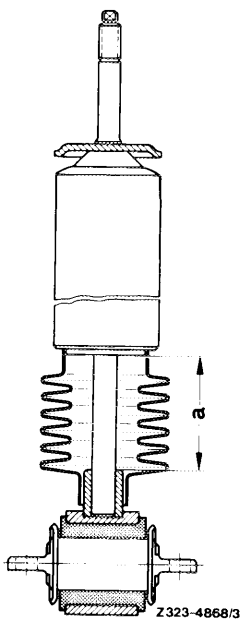
F & S
(version up to 1974)
without separating piston

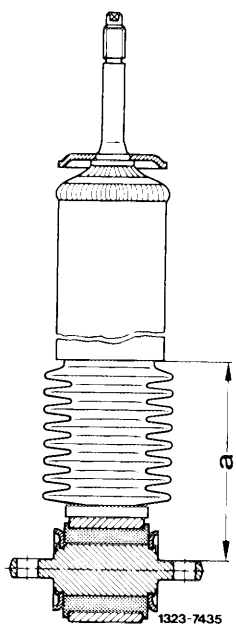


F & S
(version starting
1975 up to
10.1980)









Rear shock absorbers

a Length of exposed piston rod

Bilstein
F & S (starting
11.1980) with
separating piston

F & S
(version up to
1974) without
separating piston

F & S
(version starting
1975 up to
10.1980)

Boge

Note

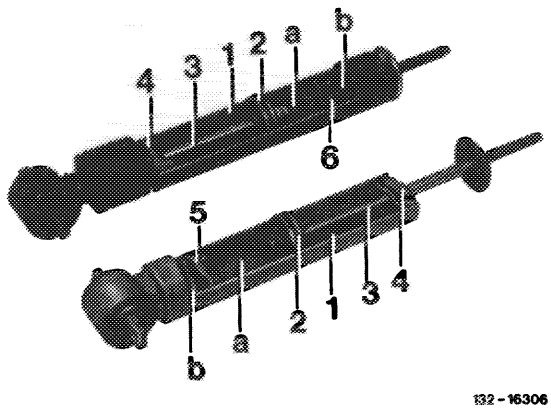
When testing and evaluating gas pressure shock absorbers, a fundamental difference between two designs must be made. Difference refers to expansion and to the separation of oil and gas chamber.

Gas pressure shock absorber with separating piston between oil and gas chamber (Bilstein, F & S starting November 1980).

Installation position of shock absorber with **piston rod in upward direction.**

Gas pressure shock absorber without separating piston between oil and gas chamber (F & S up to October 1980 and Boge).

Installation position of shock absorber with **piston rod in downward direction.**



132-16306

1 Cylinder
2 Operating piston with spring washers
3 Piston rod
4 Closing package with piston rod seal and piston rod guide
5 Separating pistons
6 Baffle plate
a Oil chamber
b Gas chamber

Oil reserve in shock absorber

The oil reserve in the shock absorber is determined by the length of exposed piston rod „a".

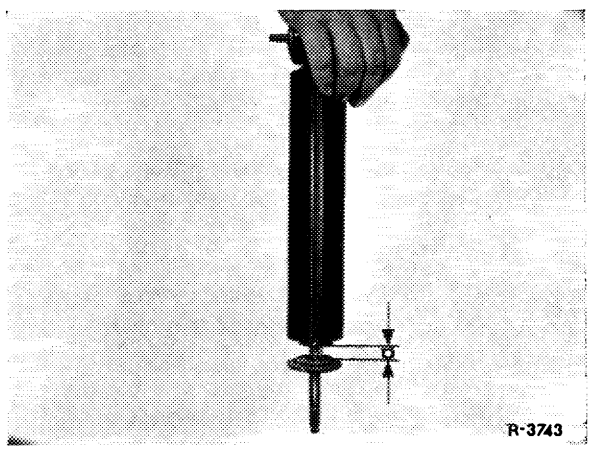
The temperature of the shock absorber should be approx. 20 °C when the oil reserve is measured.

In the event of an oil loss, the length of the exposed piston rod increases on shock absorber with separating piston; the length decreases on shock absorbers without separating piston.

If the permissible length are exceeded or not met, replace shock absorber because it has lost its effectiveness.

Shock absorber with separating piston

Push-in piston rod up to stop of operating piston on separating piston. Now measure exposed length "a".

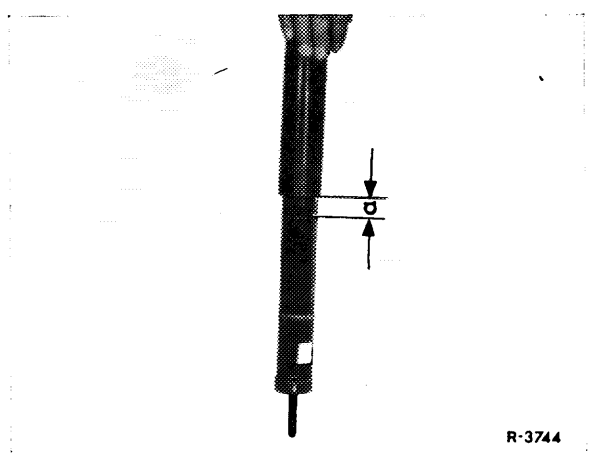


a Length of exposed piston rod

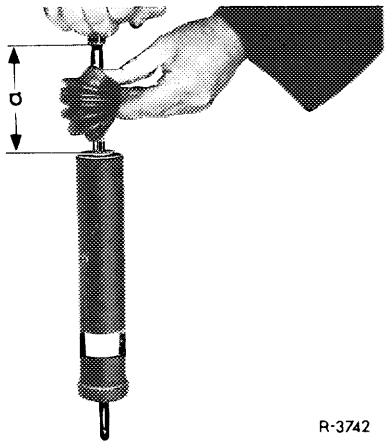
Shock absorber without separating piston

Compress shock absorber – with piston rod in upward direction – until a clearly noticeable, additional resistance begins, that is until the piston makes contact with oil column. Now measure length of exposed piston "a".

Note: When checking oil reserve in shock absorbers without separating piston, any occurring **intermediate noises are without significance.**

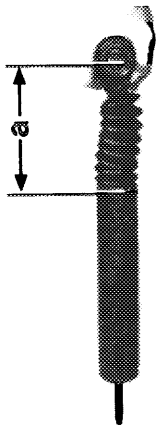


a Length of exposed piston rod



R-3742

Rear shock absorber
F & S up to October 1980
a Length of exposed piston rod



132-16308

Rear shock absorber
Boge
a Length of exposed piston rod

Sight test

Check piston rod carefully for surface damage.

Check piston rod for bends. A bent piston rod is recognized by binding when inserted into guide bushing.

Note: For lubricating guide bushing outside piston rod seal, the piston rod is designed to provide a slight oil film.

The alignment of the suspension points is important for the correct function of the piston rod seal. In the event of leaks on piston rod seal, be sure to check whether alignment of suspension points is in order.

Rumbling and knocking noises

Check upper suspension for correct assembly, lower suspension for tight seat of fastening bracket and rubber mount in housing eye.

Determine oil reserve. If oil loss is very high, shock absorbers with separating piston show a tendency toward knocking, since during deflection the piston rod may knock against separating piston. On rear mounted shock absorbers, check alignment of upper suspension point on frame floor to lower suspension point on semitrailing arm (32–126).

A loose operating piston may be responsible for the knocking.
To check, push piston rod inwards in installation position of shock absorber, release and push-in again. If the operating piston is loose, a change between pushing and pulling will be noticed by a knocking noise.

Hissing noises

Shock absorbers with separating piston have a tendency toward hissing noises if the separating piston is leaking, since gas will enter oil system and will cause foaming. Such shock absorbers may actually still be fully operational, but should nevertheless be replaced.

Attention!
Shock absorbers with separating piston without an absolutely solid separation of oil and gas chamber can be checked for noises etc. in installation position, that is, with piston rod in downward direction. If the noise test has been preceded by testing the oil reserve (with piston rod pointing in upward direction) or if the shock absorber has been in storage with piston rod pointing in upward direction, the oil is mixed with gas.

Noises can be evaluated only after pushing the piston rod several times inwards.