

Tie-Rod Cylinder Series 322/521

Technical data



Tie-Rod Cylinder Series 322/521

Double-acting, with adjustable cushioning, 32–250 mm dia.

Rexroth
Bosch Group

Technical Data

Type		Piston cylinder, tie rod version
Working pressure	p max.	10 bar
Ambient temperature range		-15 °C to +80 °C (-5 °F to +176 °F)
Medium	Compressed air	ISO 8573-1:2001, class 6-4-3 or lower*
Material	Piston rod Cylinder tube Cover Dia. 32 to 125 mm 160 to 250 mm Seals	X 10 Cr Ni S 18.9 roller burnished Al-anodized GD-Zn GD/GK - Al NBR

Application area

Suitable for all mechanical control systems.

* Particle size ≤ 5 µm, dew point ≤ 3 °C, oil content ≤ 1 mg/m³



Technical information

Piston Ø	[mm]	32	40	50	63	80	100	125	160	200	250
Piston force, theoretical	Pushing force [N]	482	754	1178	1870	3016	4712	7363	12064	18850	29452
	Pulling force [N]	415	602	1025	1642	2788	4288	6939	11310	18095	28274
Cushioning length	[mm]	16	21	21	23,5	23,5	22,5	22,5	31,5	31,5	40
Cushioning energy	[Nm]	3,2	5,8	13	16,5	33,5	54	83,5	198	312	590
Weight	0 mm stroke [kg]	0,72	1,3	1,64	2,84	4,18	6,46	9,18	11,42	14,65	40,6
	+ 50 mm stroke [kg]	0,13	0,2	0,28	0,38	0,46	0,7	0,84	1,34	1,6	3,8

Part no.

Piston Ø	32	40	50	63	80
Piston rod thread	M 10	M 16 x 1,5	M 16 x 1,5	M 20 x 1,5	M 20 x 1,5
Threaded ports ³⁾	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8
Standard stroke ²⁾					
50	5211680010	5211780010	5211880010	5211980010	5212080010
100	5211680000	5211780000	5211880000	5211980000	5212080000
150	5211680020	5211780020	5211880020	5211980020	5212080020
200	5211680030	5211780030	5211880030	5211980030	5212080030
250	5211680160	5211780140	5211880180	5211980150	5212080170
300	5211680140	5211780150	5211880070	5211980140	5212080130
350	5211680110	5211780190	5211880130	5211980130	5212080280
400	5211680170	5211780160	5211880080	5211980160	5212080110
450	5211680300	5211780310	5211880320	5211980360	5212080230
500	5211680310	5211780300	5211880310	5211980310	5212080300
max. stroke ¹⁾	800	1200	1100	1500	1500
Piston Ø	100	125	160	200	250
Piston rod thread	M 27 x 2	M 27 x 2	M 36 x 2	M 36 x 2	M 36 x 2
Threaded ports ³⁾	G 1/2	G 1/2	G 3/4	G 3/4	G 1
Standard stroke ²⁾					
50	5212180010	5212280010	5212380010	5212480010	5212580010
100	5212180000	5212280000	5212380000	5212480000	5212580000
150	5212180020	5212280020	5212380020	5212480020	5212580020
200	5212180030	5212280030	5212380030	5212480030	5212580030
250	5212180120	5212280060	5212380060	5212480050	5212580100
300	5212180080	5212280090	5212380080	5212480060	5212580110
350	5212180150	5212280140	5212380410	5212480040	5212580140
400	5212180060	5212280070	5212380140	5212480100	5212580070
450	5212180400	5212280310	5212380370	5212480210	5212580200
500	5212180300	5212280300	5212380300	5212480300	5212580310
max. stroke ¹⁾	2000	2000	2000	2000	2000

¹⁾ Recommend. max. stroke (longer strokes on request).

²⁾ Intermediate strokes in 5 mm increments available.

³⁾ to ISO 228/1

Tie-Rod Cylinder Series 322/521

Double-acting, with adjustable cushioning, 32–250 mm dia.

Rexroth
Bosch Group

▲ Accessories (to be ordered separately)

Accessory	Type	32	40	50	63	80
	Piston dia.	32	40	50	63	80
	Clevis mounting	5210163462	5210263462	5210363462	5210463462	5210563462
	Piston dia.	100	125	160	200	250
	Clevis mounting Further mountings ... ¹⁾	5210663462	5210763462	5210863402	5210963402	5211063402
	Piston dia.	32	40	50	63	80
	Rod clevis	8958009902	8958010002	8958010002	8958010102	8958010102
	Piston dia.	100	125	160	200	250
	Rod clevis Further piston rod adapters ... ¹⁾	8958010202	8958010202	8958010302	8958010302	8958010302
	Piston dia.	32	40	50	63	80
	Spare part kit	5210160002	5210260002	5210360002	5210460002	5210560002
	Piston dia.	100	125	160	200	250
	Spare part kit Spare parts	5210660002	5210760002	5210860002	5210960002	5211060002

see separate catalogue

¹⁾ ... see at the product overview.

Fig. 1

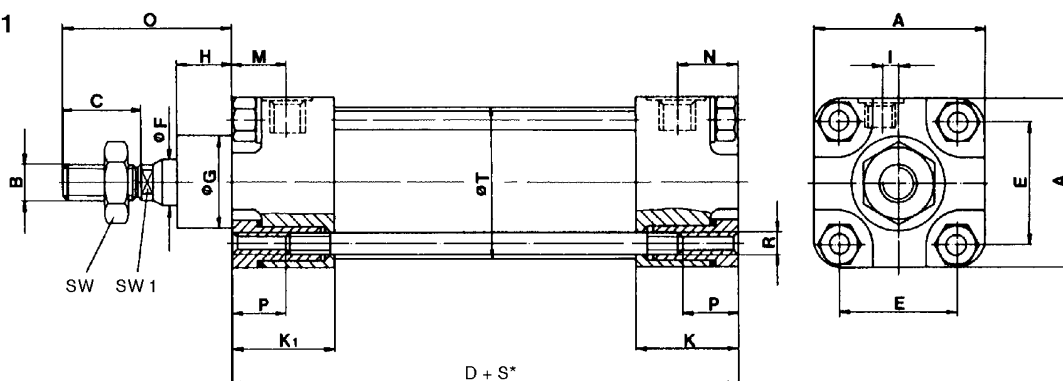
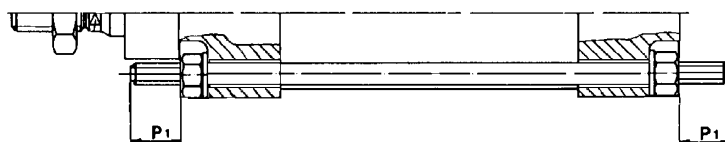


Fig. 2



S* = Stroke Fig. 1 Cylinder dia. 200 mm Fig. 2 Cylinder dia. 32–250 mm

Piston Ø	A	B	C	D	E	F	G ^{e9}	H	I	K
32	45	M 10	20	80	33	12	25	15	3	23
40	52	M16x1,5	36	110	40	18	32	15	4	33,5
50	65	M16x1,5	36	110	49	18	32	15	4	33,5
63	75	M 20x1,5	46	125	59	22	45	20	4	38,5
80	95	M 20x1,5	46	125	75	22	45	20	4	36
100	115	M 27x2	63	145	90	30	55	20	0	39,5
125	140	M 27x2	63	145	110	30	55	20	0	39,5
160	180	M36x2	85	180	140	40	65	25	0	51,5
200	220	M36x2	85	180	175	40	65	25	0	47,5
250	280	M36x2	70	213	220	50	95	75	0	—

Tie-Rod Cylinder Series 322/521

Double-acting, with adjustable cushioning, 32–250 mm dia.

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Piston Ø	K1	M	N	O	P	P1	R	SW	SW1	ØT
32	27	15	11	45	10	–	M 6	17	8	36
40	45,5	25	13	70	10	–	M 6	24	13	45
50	45,5	25	14	70	14	–	M 8	24	13	55
63	55,5	33	16	85	14	–	M 8	30	17	69
80	52	33,5	17,5	85	17	–	M 10	30	17	85
100	62,5	41	18	110	17	–	M 10	41	24	105
125	62,5	41	18	110	18	–	M12	41	24	132
160	81,5	51	21	135	20	–	M16	55	32	167
200	77,5	49	19	135	20	–	M16	55	32	210
250	–	31	31	165	–	45	M 20	55	36	262

Tie-Rod Cylinder Series 322/521

Double-acting, with magnetic piston and adjustable cushioning, 32–250 mm dia.

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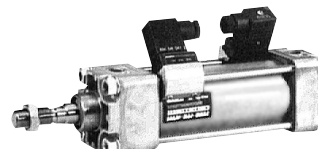
Technical Data

Type		Piston cylinder, tie rod version
Working pressure	p max.	10 bar
Ambient temperature range		-15 °C to +70 °F (+5 °F to +158 °F)
Medium	Compressed air	ISO 8573-1:2001, class 6-4-3 or lower*
Material	Piston rod Cylinder tube Cover Dia. 32 to 125 mm 160 to 250 mm Seals	X 10 Cr Ni S 18.9 roller burnished Al-anodized GD-Zn GD/GK - Al NBR

Application area

Suitable for all mechanical control systems.

* Particle size ≤ 5 µm, dew point ≤ 3 °C, oil content ≤ 1 mg/m³



Technical information

Piston Ø	[mm]	32	40	50	63	80	100	125	160	200	250
Piston force, theoretical at 6 bar (theoretical at 87 psi)	Pushing force	482	754	1178	1870	3016	4712	7363	12064	18850	29452
	[N]										
	Pulling force	415	602	1025	1642	2788	4288	6939	11310	18095	28274
	[N]										
Cushioning length	[mm]	16	21	21	23,5	23,5	22,5	22,5	31,5	31,5	40
Cushioning energy	[Nm]	3,2	5,8	13	16,5	33,5	54	83,5	198	312	590
Weight	0 mm stroke	0,72	1,3	1,64	2,84	4,18	6,46	9,18	11,42	14,65	40,6
	+ 50 mm stroke	0,13	0,2	0,28	0,38	0,46	0,7	0,84	1,34	1,6	3,8
	[kg]										

Part no.

Piston Ø	32	40	50	63	80
Piston rod thread	M 10	M 16 x 1,5	M 16 x 1,5	M 20 x 1,5	M 20 x 1,5
Threaded ports ³⁾	G1/8	G 1/4	G 1/4	G 3/8	G 3/8
Standard stroke ²⁾					
50	3220606010	3220616020	3220626010	3220636010	3220646010
100	3220606000	3220616000	3220626000	3220636000	3220646000
150	3220606020	3220616030	3220626020	3220636020	3220646020
200	3220606030	3220616040	3220626030	3220636030	3220646030
250	3220606090	3220616090	3220626080	3220636060	3220646070
300	3220606130	3220616050	3220626040	3220636070	3220646050
350	3220606080	3220616060	3220626190	3220636120	3220646110
400	3220606050	3220616070	3220626170	3220636100	3220646080
450	3220606300	3220616340	3220626300	3220636210	3220646390
500	3220606320	3220616310	3220626180	3220636330	3220646330
max. stroke ¹⁾	700	1200	1100	1500	1500
Piston Ø	100	125	160	200	250
Piston rod thread	M 27 x 2	M 27 x 2	M 36 x 2	M 36 x 2	M 36 x 2
Threaded ports ³⁾	G 1/2	G 1/2	G 3/4	G 3/4	G 1
Standard stroke ²⁾					
50	3220656010	3220666010	3220676020	3220686010	—
100	3220656000	3220666000	3220676000	3220686000	3220696000
150	3220656020	3220666020	3220676010	3220686020	3220696020
200	3220656030	3220666030	3220676030	3220686030	—
250	3220656080	3220666180	3220676090	3220686040	—
300	3220656100	3220666100	3220676080	3220686050	—
350	3220656050	3220666070	3220676140	3220686090	—
400	3220656090	3220666110	3220676070	3220686060	—
450	3220656370	3220666350	3220676060	3220686110	—
500	3220656310	3220666300	3220676350	3220686380	—
max. stroke ¹⁾	2000	2000	2000	2000	2000

¹⁾ Recommend. max. stroke (longer strokes on request)

²⁾ Intermediate strokes on request.

³⁾ to ISO 228/1

Tie-Rod Cylinder Series 322/521

Double-acting, with magnetic piston and adjustable cushioning, 32–250 mm dia.

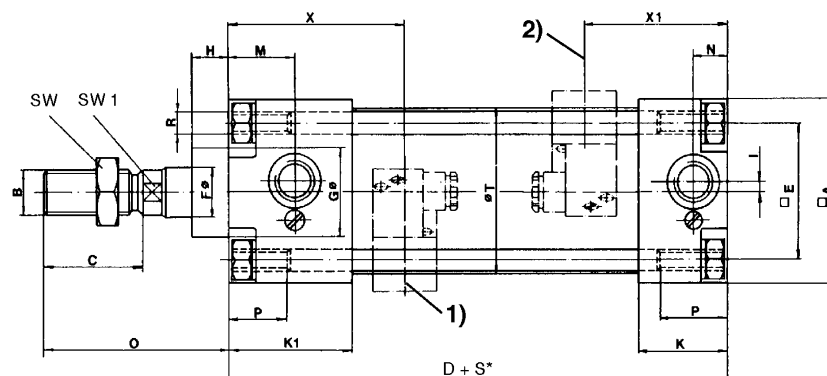
Rexroth
Bosch Group

▲ Accessories (to be ordered separately)

Accessory	Type	32	40	50	63	80
	Piston dia.	32	40	50	63	80
	Clevis mounting	5210163462	5210263462	5210363462	5210463462	5210563462
	Piston dia.	100	125	160	200	250
	Clevis mounting Further mountings ... ¹⁾	5210663462	5210763462	5210863402	5210963402	5211063402
	Piston dia.	32	40	50	63	80
	Rod clevis	8958009902	8958010002	8958010002	8958010102	8958010102
	Rod clevis	8958010202	8958010202	8958010302	8958010302	8958010302
	Piston dia. Further piston rod adapters ... ¹⁾	100	125	160	200	250
	Piston dia.	32 - 80	80–125	160v200	250	
	Proximity reed switch with LED	8940410612	8940410612	8940410612	8940410612	
	Connector	8941004702	8941004702	8941004702	8941004702	
	Further sensors ... ¹⁾ Clamp for sensor	5230033502	3220643562	3220673522	3220893502	
	Piston dia.	32	40	50	63	80
	Spare part kit	3220600002	3220610002	3220620002	3220630002	3220640002
	Piston dia.	100	125	160	200	250
	Spare part kit Spare parts	3220650002	3220660002	3220670002	3220680002	3220890002

see separate catalogue

¹⁾ ... see at the product overview.



S* = Stroke 1) Position of annular magnet outstroked 2) Position of annular magnet instroked
With standard cylinder 250 mm dia. the tie rod protrudes out of the cylinder cover and cap by 45 mm in each case.

Piston Ø	A	B	C	D	E	F	G ⁶⁹	H	I	K
32	45	M 10	20	103	33	12	25	15	3	23
40	52	M16x1,5	36	131	40	18	32	15	4	33,5
50	65	M16x1,5	36	133	49	18	32	15	4	33,5
63	75	M 20x1,5	46	150	59	22	45	20	4	38,5
80	95	M 20x1,5	46	149	75	22	45	20	4	36
100	115	M 27x2	63	174	90	30	55	20	0	39,5
125	140	M 27x2	63	190	110	30	55	20	0	39,5
160	180	M36x2	85	222	140	40	65	25	0	51,5
200	220	M36x2	85	227	175	40	65	25	0	47,5
250	280	M36x2	70	231	220	50	95	75	0	84

Piston Ø	K1	M	N	O	P	R	SW	SW1	ØT	X	X1
32	27	15	11	45	10	M 6	17	8	36	54	50
40	45,5	25	13	70	10	M 6	24	13	45	72	60
50	45,5	25	14	70	14	M 8	24	13	55	73	61
63	55,5	33	16	85	14	M 8	30	17	69	83	66
80	52	33,5	17,5	85	17	M 10	30	17	85	83	67
100	62,5	41	18	110	17	M 10	41	24	105	98	75
125	62,5	41	18	110	18	M12	41	24	132	106	83
160	81,5	51	21	135	20	M16	55	32	167	126	96
200	77,5	49	19	135	20	M16	55	32	210	128	98
250	84	31	31	165	–	M 20	55	36	262	115	115

Tie-Rod Cylinder Series 322/521

Double-acting, with trunnion mounting and adjustable cushioning, 32–200 mm dia.

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Technical Data

Type		Piston cylinder, tie rod version
Working pressure	p max.	10 bar
Ambient temperature range		-15 °C to +80 °C (-5 °F to +176 °F)
Medium	Compressed air	ISO 8573-1:2001, class 6-4-3 or lower*
Material	Piston rod Cylinder tube Cover Dia. 32 to 125 mm 160 to 200 mm Seals	X 10 Cr Ni S 18.9 roller burnished Al-anodized GD-Zn GD/GK - Al NBR

Application area

Suitable for all mechanical control systems.

* Particle size ≤ 5 µm, dew point ≤ 3 °C, oil content ≤ 1 mg/m³



Technical information

Piston Ø	[mm]	32	40	50	63	80	100	125	160	200
Piston force, theoretical at 6 bar (theoretical at 87 psi)	Pushing force	482	754	1178	1870	3016	4712	7363	12064	18850
	Pulling force [N]	415	602	1025	1642	2788	4288	6939	11310	18095
Cushioning length	[mm]	16	21	21	23,5	23,5	22,5	22,5	31,5	31,5
Cushioning energy	[Nm]	3,2	5,8	13	16,5	33,5	54	83,5	198	312
Weight	0 mm stroke [kg]	0,99	1,85	2,29	3,74	5,43	8,1	10,92	14,92	19,55
	+ 50 mm stroke [kg]	0,13	0,2	0,28	0,38	0,46	0,7	0,84	1,34	1,6

Part no.

Piston Ø	32	40	50	63	80
Piston rod thread	M 10	M 16 x 1,5	M 16 x 1,5	M 20 x 1,5	M 20 x 1,5
Threaded ports ³⁾	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8
Stand. stroke ²⁾					
50	5211686010	5211786010	5211886010	5211986010	5212086010
100	5211686000	5211786000	5211886000	5211986000	5212086000
150	5211686020	5211786020	5211886020	5211986020	5212086020
200	5211686030	5211786030	5211886030	5211986030	5212086030
250	5211686060	5211786080	5211886200	5211986080	5212086150
300	5211686070	–	5211886040	5211986070	5212086060
350	5211686050	–	5211886210	5211986040	5212086080
400	5211686180	5211786050	5211886080	–	5212086180
450	–	5211786190	5211886230	5211986170	5212086190
500	–	5211786310	5211886270	–	5212086200
max. stroke ¹⁾	700	1200	1100	1500	1500
Piston Ø	100	125	160	200	250
Piston rod thread	M 27 x 2	M 27 x 2	M 36 x 2	M 36 x 2	M 42 x 2
Threaded ports ³⁾	G 1/2	G 1/2	G 3/4	G 3/4	G 1
Stand. stroke ²⁾					
50	5212186010	5212286010	5212386010	5212486010	5212580010
100	5212186000	5212286000	5212386000	5212486000	5212580000
150	5212186020	5212286020	5212386020	5212486020	5212580020
200	5212186030	5212286030	5212386030	5212486030	5212580030
250	5212186080	5212286090	5212386040	5212486040	5212580100
300	5212186090	5212286040	5212386060	5212486050	5212580110
350	5212186060	5212286070	5212386050	–	5212580140
400	5212186070	5212286110	5212386070	5212486060	5212580070
450	5212186320	5212286170	5212386330	–	5212580200
500	5212186300	5212286350	5212386300	5212486080	5212580310
max. stroke ¹⁾	2000	2000	2000	2000	

¹⁾ Recommend. max. stroke (longer strokes on request).

²⁾ Intermediate strokes in 5 mm increments available on request.

³⁾ to ISO 228/1

Tie-Rod Cylinder Series 322/521

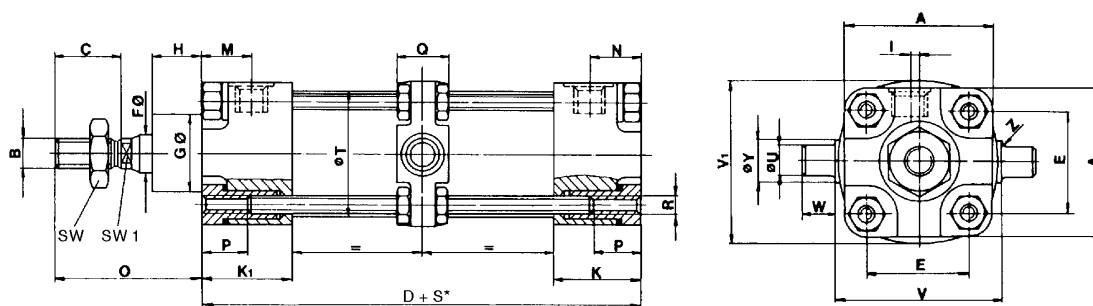
Double-acting, with trunnion mounting and adjustable cushioning, 32–200 mm dia.

Rexroth
Bosch Group

▲ Accessories (to be ordered separately)

Accessory	Type	32	40	50	63	80
	Piston dia.	32	40	50	63	80
	Bearing brackets	3671203000	3671204000	3671204000	3671206000	3671206000
	Piston dia.	100	125	160	200	
	Clevis mounting Further mountings ... ¹⁾	3671210000	3671210000	3671216000	3671216000	
	Piston dia.	32	40	50	63	80
	Rod clevis	8958009902	8958010002	8958010002	8958010102	8958010102
	Rod clevis	8958010202	8958010202	8958010302	8958010302	8958010302
	Piston dia. Further piston rod adapters ... ¹⁾	100	125	160	200	250
	Piston dia.	32	40	50	63	80
	Spare part kit	5210160002	5210260002	5210360002	5210460002	5210560002
	Piston dia.	100	125	160	200	250
	Spare part kit	5210660002	5210760002	5210860002	5210960002	5211060002
	Spare parts	see separate catalogue				

¹⁾ ... see at the product overview.



S* = Stroke

Piston Ø	A	B	C	D	E	F	G ^{e9}	H	I	K	K1	M	N
32	45	M 10x1,5	20	80	33	12	25	15	3	23	27	15	11
40	52	M16x1,5	36	110	40	18	32	15	4	33,5	45,5	25	13
50	65	M16x1,5	36	110	49	18	32	15	4	33,5	45,5	25	14
63	75	M 20x1,5	46	125	59	22	45	20	4	38,5	55,5	33	16
80	95	M 20x1,5	46	125	75	22	45	20	4	36	52	33,5	17,5
100	115	M 27x2	63	145	90	30	55	20	0	39,5	62,5	41	18
125	140	M 27x2	63	145	110	30	55	20	0	39,5	62,5	41	18
160	180	M36x2	85	180	140	40	65	25	0	51,5	81,5	51	21
200	220	M36x2	85	180	175	40	65	25	0	47,5	77,5	49	19

Piston Ø	O	P	Q	R	SW	SW1	T	U ^{e9}	V	V1	W	Y	Z
32	45	10	22	M 6	17	8	36	12	50	47	12	20	1
40	70	10	30	M 6	24	13	45	16	63	54	16	25	1,6
50	70	14	30	M 8	24	13	55	16	73	67	16	25	1,6
63	85	14	35	M 8	30	17	69	20	90	80	20	30	1,6
80	85	17	35	M 10	30	17	86	20	108	100	20	30	1,6
100	110	17	40	M 10	41	24	106	25	131	124	25	36	2
125	110	18	40	M12	41	24	132	25	159	152	25	36	2
160	135	20	50	M16	55	32	168	32	198	190	32	45	2
200	135	20	50	M16	55	32	210	32	248	240	32	45	2,5

Tie-Rod Cylinder Series 322/521

Double-acting, with through piston rod and adjustable cushioning, 32–200 mm dia.

Rexroth
Bosch Group

Technical Data

Type		Piston cylinder, tie rod version
Working pressure	p max.	10 bar
Ambient temperature range		-15 °C to +80 °C (-5 °F to +176 °F)
Medium	Compressed air	ISO 8573-1:2001, class 6-4-3 or lower*
Material	Piston rod Cylinder tube Cover Dia. 32 to 125 mm 160 to 200 mm Seals	X 10 Cr Ni S 18.9 roller burnished Al-anodized GD-Zn GD/GK - Al NBR

Application area

Suitable for all mechanical control systems.

* Particle size ≤ 5 µm, dew point ≤ 3 °C, oil content ≤ 1 mg/m³



Technical information

Piston Ø		[mm]	32	40	50	63	80	100	125	160	200
Piston force, theoretical	Pulling force	[N]	415	602	1025	1642	2788	4288	6939	11310	18850
at 6 bar	Pulling force	[N]	415	602	1025	1642	2788	4288	6939	11310	18095
Cushioning length		[mm]	16	21	21	23,5	23,5	22,5	22,5	31,5	31,5
Cushioning energy		[Nm]	3,2	5,8	13	16,5	33,5	54	83,5	198	312
Weight	0 mm stroke	[kg]	0,84	1,7	2,19	3,79	5,33	7,75	10,12	15,92	21,55
	+ 50 mm stroke	[kg]	0,13	0,2	0,28	0,38	0,46	0,7	0,84	1,34	1,6

Part no.

Piston Ø	32	40	50	63	80
Piston rod thread	M 10	M 16 x 1,5	M 16 x 1,5	M 20 x 1,5	M 20 x 1,5
Threaded ports ³⁾	G1/8	G 1/4	G 1/4	G 3/8	G 3/8
Standard stroke ²⁾					
50	5214680010	5214780010	5214880010	5214980010	5215080010
100	5214680000	5214780000	5214880000	5214980000	5215080000
150	5214680020	5214780020	5214880020	5214980020	5215080020
200	5214680030	5214780030	5214880030	5214980030	5215080030
max. stroke ¹⁾	700	1200	1100	1500	1500
Piston Ø	100	125	160	200	
Piston rod thread	M 27 x 2	M 27 x 2	M 36 x 2	M 36 x 2	
Threaded ports ³⁾	G 1/2	G 1/2	G 3/4	G 3/4	
Standard stroke ²⁾					
50	5215180010	5215280010	5215380010	5215480010	
100	5215180000	5215280000	5215380000	5215480000	
150	5215180020	5215280020	5215380020	5215480020	
200	5215180030	5215280030	5215380030	5215480030	
max. stroke ¹⁾	2000	2000	2000	2000	

¹⁾ Recommend. max. stroke (longer strokes on request).

²⁾ Intermediate strokes in 5 mm increments available.

³⁾ to ISO 228/1.

Accessories (to be ordered separately)

Accessory	Type	32	40	50	63	80
	Piston dia.	32	40	50	63	80
	Foot mounting	5210160552	5210260552	5210360552	5210460552	5210560552
	Piston dia.	100	125	160	200	
	Foot mounting	5210660552	5210760552	5210860552	5210960552	
	Further mountings ... ¹⁾					
	Piston dia.	32	40	50	63	80
	Rod clevis	8958009902	8958010002	8958010002	8958010102	8958010102
	Piston dia.	100	125	160	200	250
	Rod clevis	8958010202	8958010202	8958010302	8958010302	8958010302
	Further piston rod adapters ... ¹⁾					
	Piston dia.	32	40	50	63	80
	Spare part kit	5213160002	5213260002	5213360002	5213460002	5213560002
	Piston dia.	100	125	160	200	
	Spare part kit	5213660002	5213760002	5213860002	5213960002	
	Spare parts					

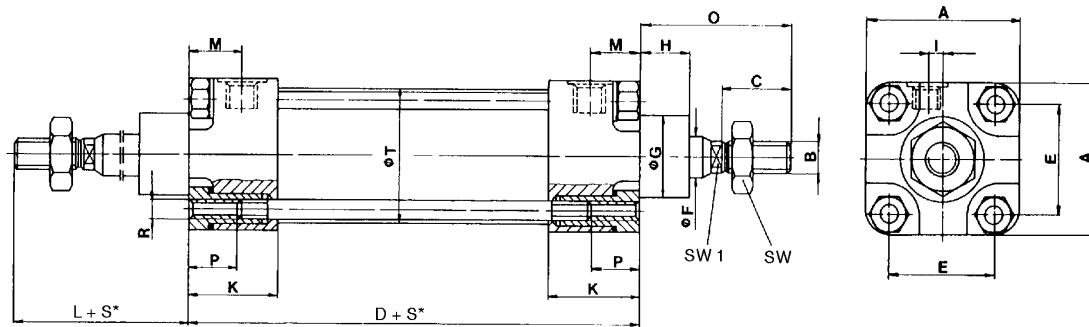
see separate catalogue

¹⁾ ... see at the product overview.

Tie-Rod Cylinder Series 322/521

Double-acting, with through piston rod and adjustable cushioning, 32–200 mm dia.

Rexroth
Bosch Group



Piston rod cylinders with double piston rod must not be subjected to torsion either during mounting or during operation.

S* = Stroke

Piston Ø	A	B	C	D	E	F	G ²⁹	H	I
32	45	M 10	20	85	33	12	25	15	3
40	52	M16x1,5	36	122	40	18	32	15	4
50	65	M16x1,5	36	122	49	18	32	15	4
63	75	M 20 x 1,5	46	142	59	22	45	20	4
80	95	M 20 x 1,5	46	141	75	22	45	20	4
100	115	M 27 x 2	63	168	90	30	55	20	0
125	140	M 27 x 2	63	168	110	30	55	20	0
160	180	M36x2	85	210	140	40	65	25	0
200	220	M36x2	85	210	175	40	65	25	0

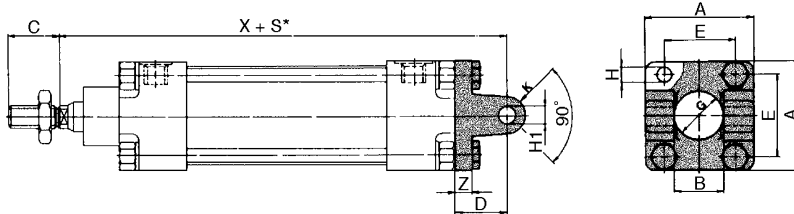
Piston Ø	K	L	M	O	P	R	SW	SW1	ØT
32	27	45	15	45	10	M6	17	8	36
40	45,5	70	25	70	10	M6	24	13	45
50	45,5	70	25	70	14	M8	24	13	55
63	55,5	85	33	85	14	M8	30	17	69
80	52	85	33,5	85	17	M 10	30	17	86
100	62,5	110	41	110	17	M 10	41	24	106
125	62,5	110	41	110	18	M12	41	24	132
160	81,5	135	51	135	20	M16	55	32	167
200	77,5	135	49	135	20	M16	55	32	210

Tie-Rod Cylinder Series 322/521

Accessories

Rexroth
Bosch Group

▲ Clevis mounting

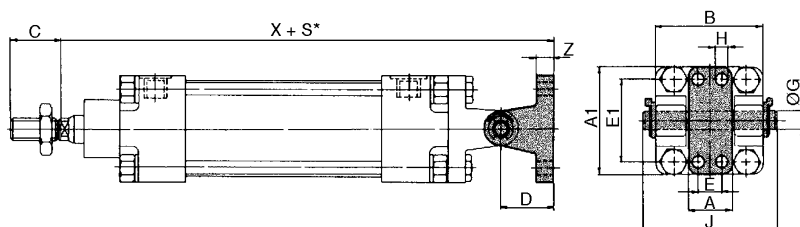


S* = stroke

Piston Ø	Part no.	A	B	C	D	E	G ^{H11}	H	H1	K	X ¹⁾	X ²⁾	Z
32	5210163462	45	26	20	18	33	26	7	8	8	146	123	8
40	5210263462	52	33	36	24	40	33	7	12	12	189	168	8
50	5210363462	65	33	36	26	49	33	9	12	12	193	170	10
63	5210463462	75	47	46	30	59	46	9	16	16	219	194	10
80	5210563462	95	47	46	32	75	46	11	16	16	220	196	12
100	5210663462	115	57	63	37	90	55	11	20	20	258	229	12
125	5210763462	140	56	63	41	110	55	14	20	20	278	233	16
160*	5210863402	180	72	85	55	140	65	19	25	25	327	285	20
200*	5210963402	200	72	85	55	175	65	19	25	25	332	285	20
250*	5211063402	380	140	70	90	220	0	22	35		—	398	20

Material: Al Mg Si 1 F 31 forged / * GGG 40 1) Series 322 2) Series 521

▲ Hinge

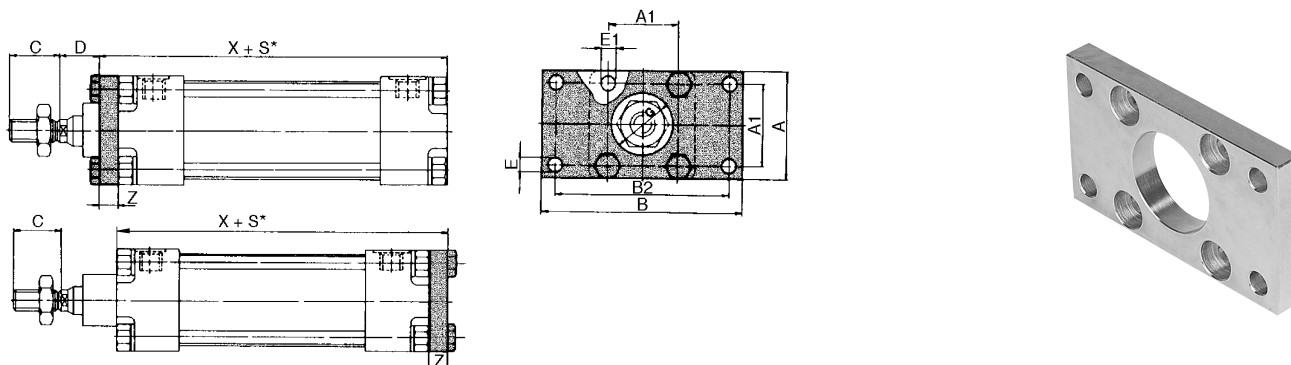


S* = stroke

Piston Ø	Part no.	A	A1	B	C	D	E	E1	G ¹⁸	H	J	X ¹⁾	X ²⁾	Z
32	5210163472	25	40	45	20	18	**	28	8	7	53	164	141	8
40	5210263472	32	52	52	36	26	16	38	12	9	63	215	194	10
50	5210363472	32	52	65	36	26	16	38	12	9	76	219	196	10
63	5210463472	46	75	75	46	34	25	54	16	11	88	253	228	12
80	5210563472	46	75	95	46	34	25	54	16	11	108	254	230	12
100	5210663472	56	115	115	63	41	32	90	20	14	131	299	270	16
125	5210763472	56	115	140	63	41	32	90	20	14	156	319	274	16
160*	5210863412	71	180	180	85	55	43	150	25	18	198	382	340	20
200*	5210963412	71	180	220	85	55	43	150	25	18	238	387	340	20
250*	5211063412	139	280	280	70	60	80	220	35	22	330	—	458	20

Material: Al Mg Si 1 F 31 forged / * GGG 40 ** only for 2 mounting holes 1) Series 322 2) Series 521

▲ Flange, front or rear

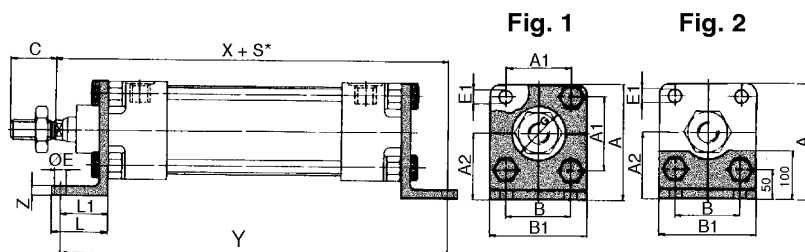


S* = stroke

Piston Ø	Part no.	A	A1	B	B2	C	D	E	E1	G ¹⁸	X ¹⁾	Z
32	5210166002	45	33	80	68	20	17	9	7,5	25	88	8
40	5210266002	52	40	90	78	36	26	9	7,5	32	118	8
50	5210366002	65	49	110	94	36	24	11	10	32	120	10
63	5210466002	75	59	120	104	46	29	11	10	45	135	10
80	5210566002	95	75	150	130	46	27	14	12	45	137	12
100	5210666002	115	90	170	150	63	35	14	12	55	157	12
125	5210766002	140	110	205	180	63	31	18	14	55	161	16
160	5210866002	180	140	260	228	85	30	22	19	65	200	20
200	5210966002	220	175	300	268	85	30	22	19	65	200	20
250	5211066002	280	220	390	330	70	48	22	22	100	260	47

Material: Zinc plated steel. 1) Series 322 and 521.

▲ Foot mounting

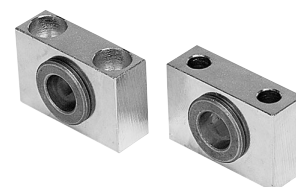
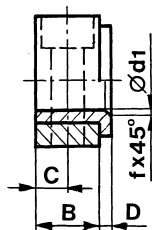
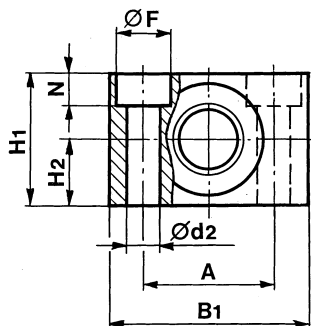


S* = stroke Fig. 1 for cylinder 32 to 200 mm dia. Fig. 2 for cylinder 250 mm dia.

Piston Ø	Part no. *	A	A1	A2	B	B1	C	E	E1	G ^{H11}	L	L1	X ¹⁾	Y ¹⁾	X ²⁾	Y ²⁾	Z
32	5210160552	54,5	33	32	28	45	20	9	7,5	25	40	27	155	157	132	134	5
40	5210260552	62	40	36	36	52	36	9	7,5	32	35	27	192	185	171	164	5
50	5210360552	77,5	49	45	45	65	36	11	10	32	45	35	202	203	179	180	5
63	5210460552	87,5	59	50	55	75	46	11	10	45	45	35	224	220	199	195	6
80	5210560552	110,5	75	63	75	95	46	14	12	45	55	43	231	235	207	211	7
100	5210660552	127	90	71	90	112	63	14	12	55	55	43	264	260	235	231	7
125	5210760552	160	110	90	100	140	63	18	14	55	68	52	289	294	244	249	8
160	5210860552	203	140	115	130	167	85	22	19	65	80	62	334	346	292	304	10
200	5210960552	242,5	175	135	170	215	85	22	19	65	90	62	339	351	292	304	12
250	5211060552	300	—	160	220	280	70	26	22	—	100	75	—	—	383	363	16

Material: zinc plated steel * consisting of 2 feet 1) Series 322 2) Series 521

▲ Bearing brackets



Piston $\varnothing$	Part no.	A	B	B1	C	D	d1 h7	d2	F	f	H1	H2	N
32	5230603402	32	15	46	7,5	3,0	12	6,6	11	1,2	30	15	6,8
40	5232603402	36	18	55	9,0	3,0	16	9,0	15	1,6	36	18	9,0
50	5232603402	36	18	55	9,0	3,0	16	9,0	15	1,6	36	18	9,0
63	5234603402	42	20	65	10,0	3,0	20	11,0	18	1,6	40	20	11,0
80	5234603402	42	20	65	10,0	3,0	20	11,0	18	1,6	40	20	11,0
100	5236603402	50	25	75	12,5	3,5	25	14,0	20	2,0	50	25	13,0
125	5236603402	50	25	75	12,5	3,5	25	14,0	20	2,0	50	25	13,0

Material: Zinc plated steel with sintered bushing. Delivered in pairs.

▲ Rod clevis

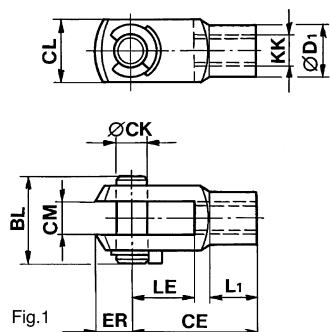


Fig.1

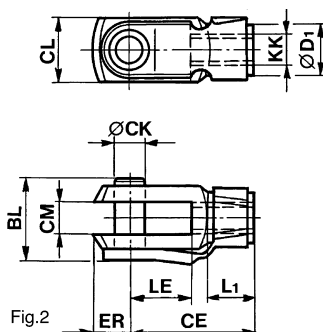


Fig.2

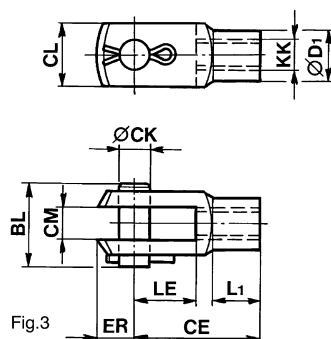
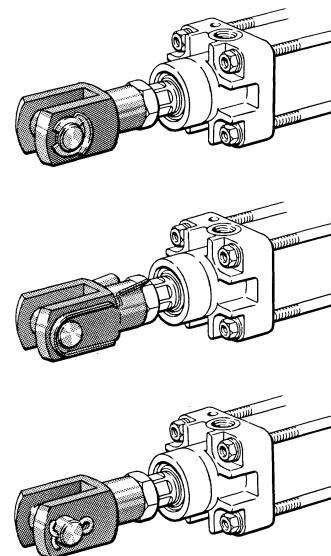


Fig.3

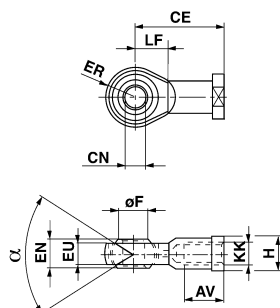


Thread KK	Fig.	Part no.	Ø D1	Ø CK	CM	LE	ER	CE	L1	BL	CL
M10	2	8958000122	18	10	10	20	12	40	15	26	20
M16x1,5	2	1822122005	26	16	16	32	19	64	24	39	32
M20x1,5	2	1822122004	34	20	20	40	20	80	30	49	40
M27x2	1	1821001493	48	30	30	54	38	110	38	73	55
M36x2	3	1827001471	60	35	35	72	44	144	—	91	70
M42x2	3	1827001472	70	40	40	84	64	168	—	106	85

Material: Galvanized steel.

▲ Ball eye rod end

ISO 8139



Thread KK	Part no.	AV	CE	CN H7	EN ^{0,1}	EU	ER ^{max}	F	H	LF	α°
M10x1,25	8958207602	20	43	10	14	10,5	14	13	17	13	24
M16x1,5	1822124005	28	64	16	21	15	21	19,3	22	21	30
M20x1,5	1822124006	33	77	20	25	18	25	24,3	30	25	30
M27x2	8958208052	51	110	30	37	25	35	34,8	41	35	30
M36x2	8958208102	56	125	35	43	28	40	37,7	50	40	32

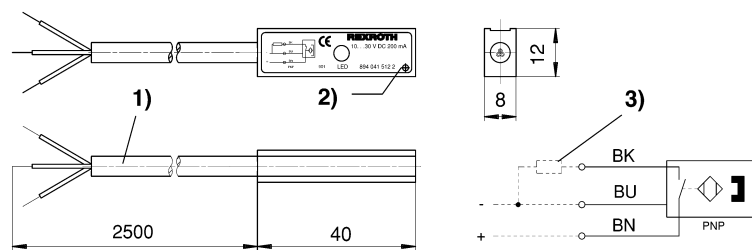
Material: zinc plated steel, with hardened swivel bearing (lubrication free). The nut is delivered with the cylinder.

Tie-Rod Cylinder Series 322

Accessories



▲ Sensor with cable and LED, CE-marked, inductive

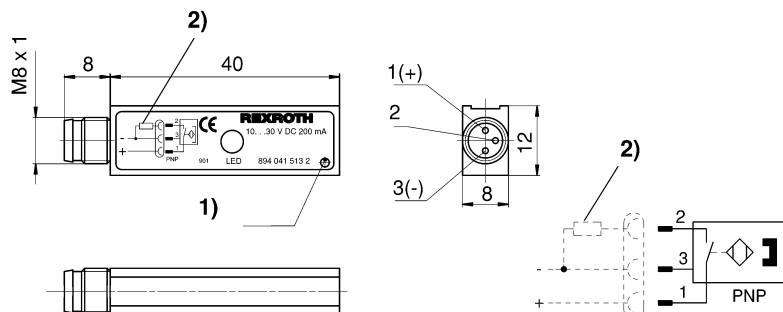


1) Cable-black 2,5 m long, extremely flexible 2) Switching point 3) Load
BK = Black BU = Blue BN = Brown

Part no.	Ambient temperature range	Operating voltage	Switching current	Function range	Extended pulse	Contact type
8940415122	-25 °C to +75 °C	DC 10–30 V	200 mA (max)	2-35 mT	20 ms	PNP (Normally open)

- Degree of protection: IP 67 - IEC 529 with cable (DIN VDE 0470)
- Hysteresis: max. 1 mm
- Output: Polarity safe, short -circuit protection
- Indicator: 2 LED (green = supply voltage; yellow = operation status)
- Body: Plastic (PEI)

▲ Sensor with connector and LED, CE-marked, inductive



1) Switching point 2) Load

Part no.	Ambient temperature range	Operating voltage	Switching current	Function range	Extended pulse	Contact type
8940415132	-25 °C to +75 °C	DC 10–30 V	200 mA (max)	2-35 mT	20 ms	PNP (Normally open)

- Degree of protection: IP 65 - IEC 529 with plug (DIN VDE 0470)
- Hysteresis: max. 1 mm
- Output: Polarity safe, short -circuit protection
- Indicator: 2 LEDs (green = supply voltage; yellow = operation status)
- Body: Plastic (PEI)

▲ Sensor mounting

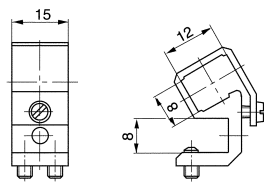


Fig. 1

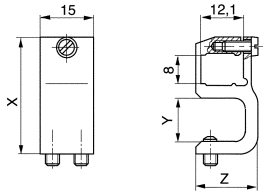
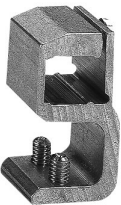


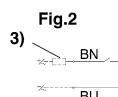
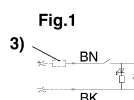
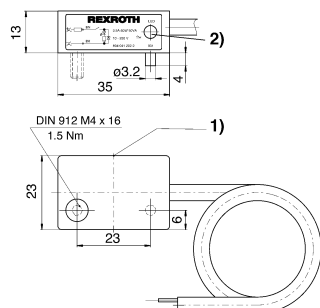
Fig. 2



Piston Ø	Fig.	Part no.	X	Y	Z
32 to 63	1	3220903502	—	—	—
80 to 125	2	3220943502	32,5	12,1	17,5
160 to 200	2	3220973502	41,4	17	20
250	2	3220893512	46,7	21	33

Figs. 1 and 2 for proximity reed switches 8940415122, -513-2

▲ Sensor with encapsulated cable, reed



1) Switchingpoint in the middle of this side 2) LED (yellow) 3) LOAD
BK = Black BU = Blue BN = Brown

Part no.	Nominal voltage	Ambient temp. range	Type	Fig.	I *	Cable	Switching capacity
8940412022	AC/DC 10–250 V	-25 °C to +75 °C	LED	1	0,5 A	black (2,5 m)	50 W / 50 VA
8940412032	AC/DC 10–250 V	-25 °C to +75 °C	LED	1	0,5 A	black (6 m)	50 W / 50 VA
8940411902	AC/DC 250 Vmax.	-20 °C to +120 °C	–	2	3 A	black (2,5 m)	60 W / 60 VA

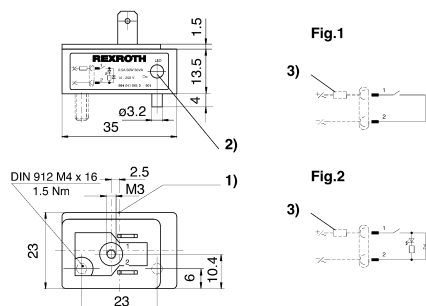
Degree of protection with plug : IP67 - IEC 529 (DIN VDE 0470)

Max. peak voltage : 500 Vs Passing speed max.: 1,5 m/s

Switching point accuracy : +/- 0,1 mm Impact resistance : 50 g (11 ms)

Vibration resistance : 35 g (50–1000 Hz) * max. switching current

Proximity reed switch for electrical connector



1) Switchingpoint in the middle of this side 2) LED (yellow) 3) LOAD
Supplied with gasket. Mounting screw M4 supplied with the clamp (MA = 1,5 Nm) MA = torque at mounting screw.

Part no.	Type	Fig.	Ambient temp. range	Nominal voltage	Switching current	Switching capacity
8940410602	without LED	1	-25 °C to +75 °C (-13 °F to +167 °F)	AC/DC 10–250 V	max. 3 A	60 W / 60 VA
8940410612	with LED	2	-25 °C to +75 °C (-13 °F to +167 °F)	AC/DC 10–250 V	max. 0,5 A	50 W / 50 VA

Degree of protection with plug : IP65 - IEC 529 (DIN VDE 0470)

Max. peak voltage : 500 Vs Passing speed max.: 1,5 m/s

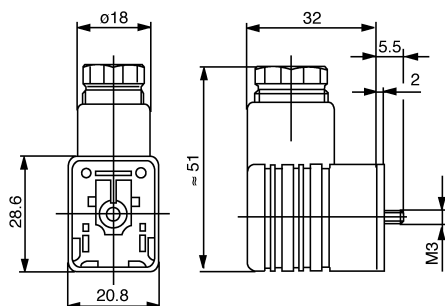
Switching point accuracy : ±0,1 mm Impact resistance : 50 g (11 ms)

Vibration resistance : 35 g (50 - 1000 Hz)

Piston Ø	32	40	50	63	80	100	125	160	200
A	12	13	14	16	17	17	16	20	20

The contact of the proximity reed switch remains closed for a stroke length of "A" mm (see table).

▲ Connector for sensor 894 041 06X 2.



1) = to remove seals

Part no.	Nominal voltage	pins	operating voltage
8941004702	max. 250 V	3	AC 60 V / DC 75 V

Degree of protection: IP 65 - IEC 529 (DIN VDE 0470) Cross section of cable: 3 x 0,25 mm²
Piping type: PVC - hose Insulation class: C to VDE 0110

▲ Clamp for Tie-Rod Cylinder

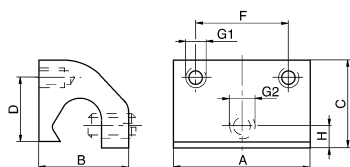


Fig. 1

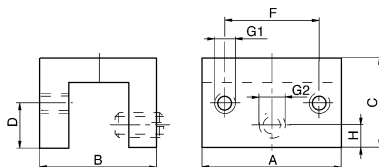
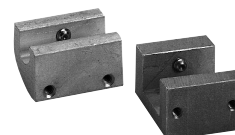


Fig. 2



Piston Ø	Part no.	Fig.	A	B	C	D	F	G1	G2	H
32 bis 80	5230063502	1	35	34	25,4	16,5	23	M 4	M 5	5
80 to 125	3220643562	1	35	22	21	12	23	M 4	M6	5
160 to 200	3220673522	2	32	32	22	11	23	M 4	M6	6
250 to 320	3220893502	2	41	41	30	16	23	M4	M6	6

Mounting screws for clamp and proximity reed switch are supplied.

Figs. 1 and 2 for proximity reed switches 8940410602, -061 2, -190 2, -202 2, -203 2

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