

ZBD 2512 **Differential Cylinder**

Brochure 07.16/DS13660



Differential Cylinder ZBD 2512 (CDH1)

Description:

The STORZ hydraulic cylinder series ZBD 2512 for 250 bar nominal pressure is interchangeable with the CDH1 series. By defining the mounting dimensions, installation length, area ratios, piston rod ends and connection threads, international interchangeability with the CDH1 series is ensured.

The same installation dimensions apply to cylinders with and without end position cushioning.

Two rod diameters are assigned as standard to each piston diameter.

6 mounting types and 6 seal variants are available as standard.

The position of the pipe connection, as well as air bleed, start-up valve and throttle screw can be freely selected. Standard (order as stated) 1,2,3,4.

Please order mounting parts separately.

Technical data:

Nominal pressure:	250 bar (25 MPa)
Static test pressure:	375 bar (37.5 MPa)
Piston ø:	40 – 320 mm
Temperature range:	-20 °C ... +80 °C (by hydraulic fluid)
Viscosity range:	(10 ... 600) 10 ⁻⁶ m ² /s
Stroke speed range:	0 – 0.5 m/s or 0 – 1 m/s depending on seal variant
Hydraulic fluid:	Mineral oil according to DIN 51524, HFD fluids



Differential Cylinder ZBD 2512 (CDH1)

Technical data:

Piston Ø (mm)	Rod Ø MM (mm)	Piston area A ₁ (cm ²)	Annular area A ₂ (cm ²)	Force at 250 bar ¹⁾		Volume flow at 0,1 m/s ²⁾		Cushioning length		G ₁ [kg]				G ₂ [kg/mm]
										Mounting type				per 1 mm Stroke
				Push [kN]	Pull [kN]	Out [l/min]	In [l/min]	head end	cap end	MT4	MF3 MF4	MP3 MP5	MS2	
40	22	12,56	8,76	31,40	21,9	7,5	5,3	21	21	9	9	7	9	0,009
	28		6,41		16		3,8			9	9	7	9	0,01
50	28	19,63	13,47	49,10	33,7	11,8	8,1	20	20	12	14	10	12	0,012
	36		9,45		23,65		5,7			12	14	10	13	0,015
63	36	31,16	20,98	77,90	52,45	18,7	12,6	23	23	19	22	16	19	0,021
	45		15,26		38,15		9,2			19	22	16	20	0,026
80	45	50,24	34,34	125,65	85,9	30,2	20,7	25	25	29	30	25	31	0,029
	56		25,62		64,1		15,4			30	31	26	32	0,036
100	56	78,50	53,88	196,35	134,8	47,1	32,3	25	25	50	52	43	52	0,046
	70		40,04		100,15		24			51	53	44	53	0,057
125	70	122,66	84,19	306,75	210,55	73,6	50,5	25	25	91	93	79	90	0,073
	90		59,07		147,7		35,4			93	95	80	92	0,092
140	90	153,86	90,28	384,75	225,7	92,4	54,2	33	33	130	127	111	131	0,107
	100		75,36		188,4		45,3			131	128	112	132	0,119
160	100	200,96	122,46	502,50	306,15	120,6	73,5	33	33	200	198	168	209	0,126
	110		105,98		264,85		63,6			202	200	169	210	0,139
180	110	254,34	159,36	636,17	398,52	152,7	95,7	37	37	269	270	236	278	0,147
	125		131,68		329,37		79,1			271	272	239	281	0,168
200	125	314,00	191,34	785,25	478,45	188,5	114,9	37	37	346	348	306	358	0,190
	140		160,14		400,35		96,1			349	351	309	361	0,215
220	140	379,94	226,08	950,30	565,5	228,1	135,7	76	76	479	515	452	509	0,271
	160		178,98		447,7		107,4			479	515	452	509	0,309
250	160	490,63	289,67	1227,20	724,5	294,5	173,8	81	81	618	664	582	649	0,327
	180		236,29		591		141,8			618	664	582	649	0,369
280	180	615,44	361,10	1539,40	903,2	369,4	216,7	86	86	784	846	753	822	0,442
	200		301,44		753,9		180,9			784	846	753	822	0,488
320	200	803,84	489,84	2010,60	1225,2	482,5	294	90	90	1180	1290	1125	1222	0,552
	220		423,90		1060,3		254,4			1180	1290	1125	1222	0,604

1) Theoretical static cylinder force (without considering efficiency and permissible loads of the mounting parts)

2) Stroke speed

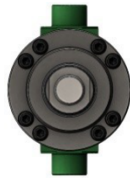
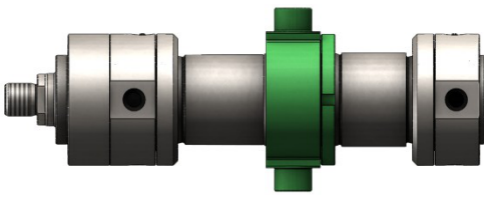
The weight is calculated as follows: $G = G_1 + G_2 \times \text{stroke}$

Recommended mean flow velocity of the hydraulic fluid in the connection cross-sections

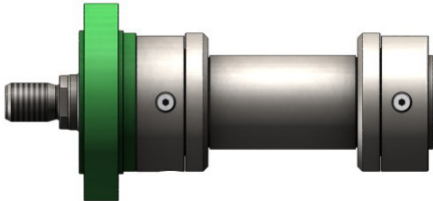
	Suction lines	Return lines	Pressure lines up to 25 bar	25 - 63 bar	63 - 160 bar	160 - 250 bar	> 250 bar
Flow speed (guide values)	≤ 1,5 m/s	≤ 3 m/s	≤ 3 m/s	3 - 5 m/s	4 - 6 m/s	5 - 8 m/s	≤ 10 m/s

Differential Cylinder ZBD 2512 (CDH1)

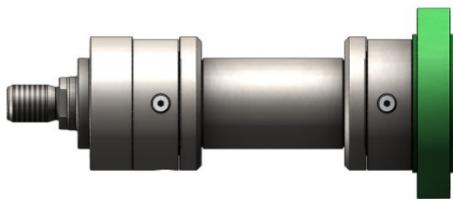
Mounting variants:



MT4 Trunnion (p.5)



MF3 Round flange at cylinder head (p.6)



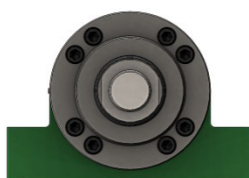
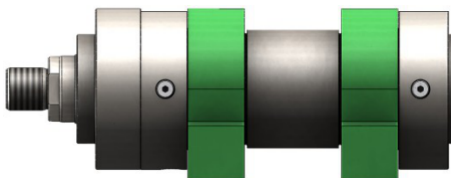
MF4 Round flange at cap (p.7)



MP3 Swivel eye at cap (p.8)



MP5 Spherical eye at cap (p.9)



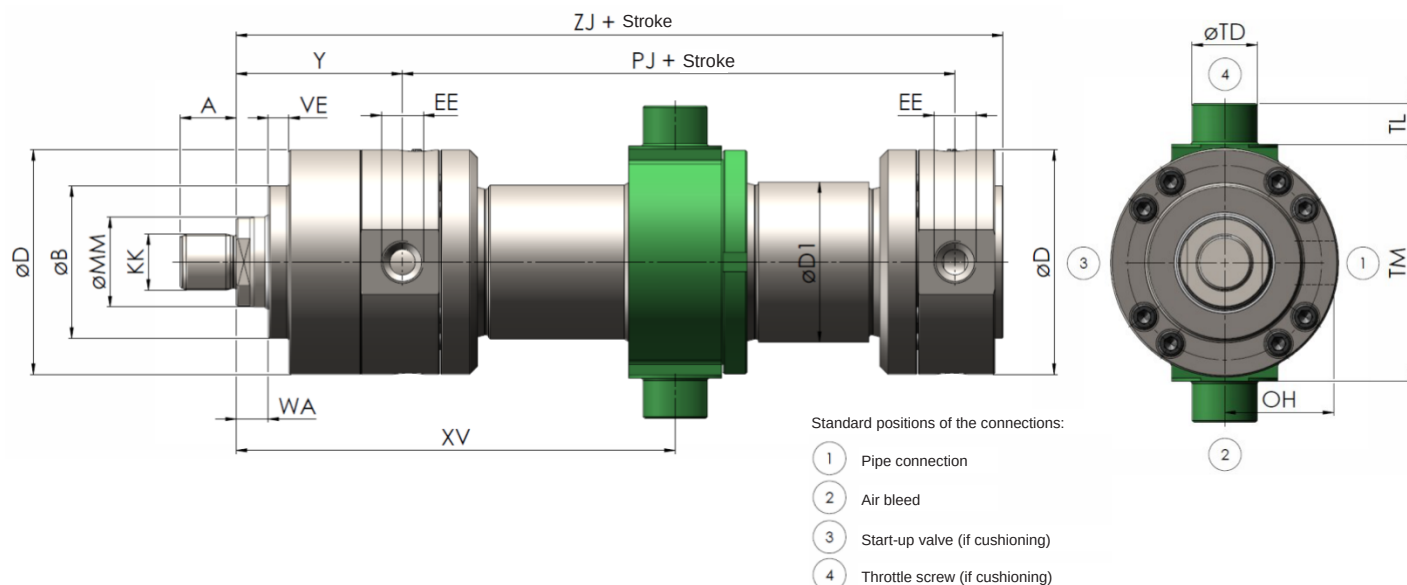
MS2 Foot mounting (p.10)

further mounting types on request



Differential Cylinder ZBD 2512 (CDH1)

Mounting type MT4 – cylinder with trunnion



Piston ø (mm)	Rod ø MM (mm)	Piston area A ₁ (cm ²)	Annular area A ₂ (cm ²)	ZJ + stroke	Pipe connection Whitworth pipe thread/ Metric thread	Rod thread KK A/B ³⁾	Amax. A/B	ØBf8	ØTDe8	ØD	ØD1 max.	TL js16	TM h13	VE	PJ + stroke	WA	XV min.	XV max. = stroke + ²⁾	OH	Y	Minimum stroke ¹⁾
40	22 28	12,56	8,76 6,41	226	G1/2 M22x1,5	M16x1,5 M18x2	16 30	52	30	88	52	20	95	20	120	14	150	136	41	79	22
50	28 36	19,63	13,47 9,45	233	G1/2 M22x1,5	M22x1,5 M24x2	22 35	65	30	102	62	20	115	16	120	18	163	140	48,5	87	32
63	36 45	31,16	20,98 15,26	262	G3/4 M27x2	M28x1,5 M30x2	28 45	75	35	120	78	20	130	17	133	22	190	155	56,5	100	47
80	45 56	50,24	34,34 25,62	280	G3/4 M27x2	M35x1,5 M39x3	35 55	95	40	140	95	25	145	13	146	20	206	160	67	104	58
100	56 70	78,50	53,88 40,04	330	G1 M33x2	M45x1,5 M50x3	45 75	115	50	170	125	30	175	20	171	30	249	185	82	124	79
125	70 90	122,66	84,19 59,07	382	G1 1/4 M42x2	M58x1,5 M64x3	58 95	135	60	206	150	40	210	17	205	32	283	207	99	135	91
140	90 100	153,86	90,28 75,36	420	G1 1/4 M42x2	M65x1,5 M80x3	65 110	155	65	226	170	42,5	230	22	219	35	326	220	109,5	156	121
160	100 110	200,96	122,46 105,98	475	G1 1/2 M48x2	M80x2 M90x3	80 120	200	75	265	190	52,5	275	80	240	40	376	254	129	185	142
180	110 125	254,34	159,36 131,68	515	G1 1/2 M48x2	M100x2 M100x3	100 140	220	85	292	210	55	300	90	264	40	410	272	142,5	199	158
200	125 140	314,00	191,34 160,14	535	G1 1/2 M48x2	M110x2 M110x4	110 150	235	90	310	235	55	320	95	278	40	441	267	152	205	194
220	140 160	379,94	226,08 178,98	635	G1 1/2 M48x2	M120x3 M120x4	120 160	270	100	355	273	60	370	115	326	40	482,5	327,5	174	242	155
250	160 180	490,63	289,67 236,29	659	G1 1/2 M48x2	M120x3 M120x4	120 160	300	110	395	305	65	410	125	326	40	516,5	341,5	194	266	175
280	180 200	615,44	361,10 301,44	744	G1 1/2 M48x2	M130x3 M150x4	130 190	325	130	425	343	70	450	130	375	40	637,5	301,5	210	282	336
320	200 220	803,84	489,84 423,90	815	G1 1/2 M48x2	- M160x4	- 200	365	160	490	394	90	510	155	431	40	592,5	412,5	243	287	180

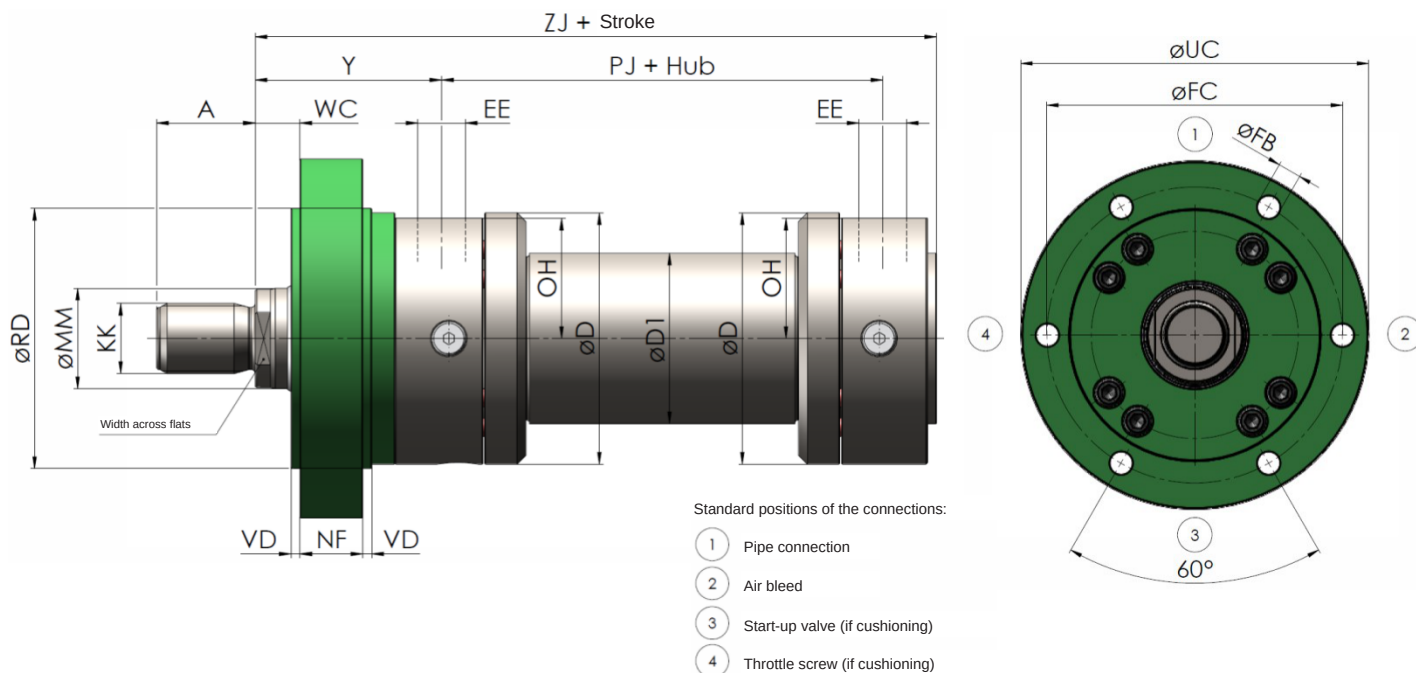
¹⁾ Minimum stroke due to production. Shorter stroke lengths possible by using a spacer bush

²⁾ State XV dimension in plain text when ordering

³⁾ Rod thread A or B is possible for each piston rod diameter

Differential Cylinder ZBD 2512 (CDH1)

Mounting type MF3 – round flange at cylinder head



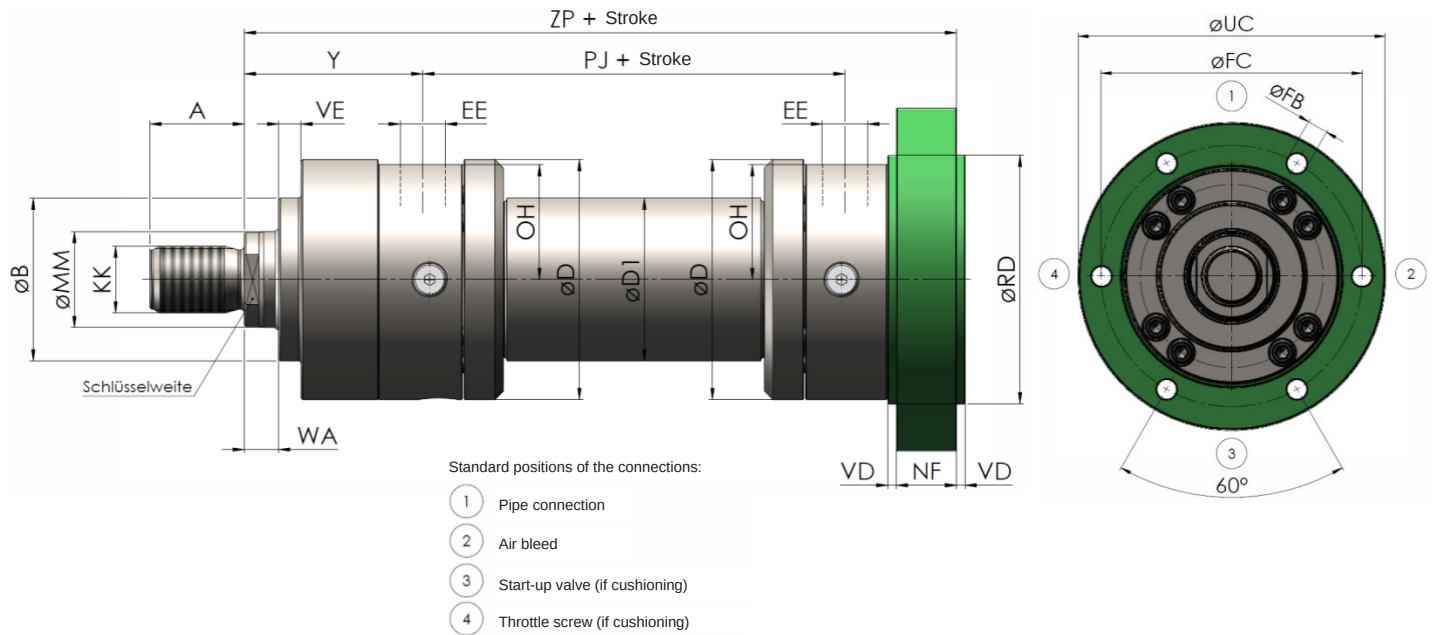
Piston $\varnothing$ (mm)	Rod $\varnothing$	Piston area A_1 (cm ²)	Annular area A_2 (cm ²)	ZJ + stroke	Pipe connection Whitworth pipe thread/ Metric thread	Rod thread KK A/B ¹⁾	A max. A/B	$\varnothing B f8$	$\varnothing RD e8$	$\varnothing D$	$\varnothing D1$ max.	$\varnothing FB H13$	$\varnothing FC js13$	$\varnothing UC -1$	PJ + stroke	WC	NF	VD	OH	Y	Width across flats
40	22 28	12,56	8,76 6,41	226	G1/2 M22x1,5	M16x1,5 M18x2	16 30	52	90	88	52	9	108	130	120	19	30	5	41	79	16 22
50	28 36	19,63	13,47 9,45	233	G1/2 M22x1,5	M22x1,5 M24x2	22 35	65	110	102	62	11	130	160	120	23	30	5	48,5	87	22 30
63	36 45	31,16	20,98 15,26	262	G3/4 M27x2	M28x1,5 M30x2	28 45	75	130	120	78	13,5	155	185	133	27	35	5	56,5	100	30 36
80	45 56	50,24	34,34 25,62	280	G3/4 M27x2	M35x1,5 M39x3	35 55	95	145	140	95	13,5	170	200	146	25	35	5	67	104	36 46
100	56 70	78,50	53,88 40,04	330	G1 M33x2	M45x1,5 M50x3	45 75	115	175	170	125	17,5	205	245	171	35	45	5	82	124	46 60
125	70 90	122,66	84,19 59,07	382	G1 1/4 M42x2	M58x1,5 M64x3	58 95	135	210	206	150	22	245	295	205	37	50	5	99	135	60 75
140	90 100	153,86	90,28 75,36	420	G1 1/4 M42x2	M65x1,5 M80x3	65 110	155	230	226	170	22	265	315	219	45	50	10	109,5	156	75 85
160	100 110	200,96	122,46 105,98	475	G1 1/2 M48x2	M80x2 M90x3	80 120	200	275	265	190	30	325	385	240	50	60	10	129	185	85 95
180	110 125	254,34	159,36 131,68	515	G1 1/2 M48x2	M100x2 M100x3	100 140	220	300	292	210	30	360	420	264	50	70	10	142,5	199	95 110
200	125 140	314,00	191,34 160,14	535	G1 1/2 M48x2	M110x2 M110x4	110 150	235	320	310	235	33	375	445	278	50	75	10	152	205	110 120
220	140 160	379,94	226,08 178,98	635	G1 1/2 M48x2	M120x3 M120x4	120 160	270	370	355	273	33	430	490	326	60	85	10	174	242	120 140
250	160 180	490,63	289,67 236,29	659	G1 1/2 M48x2	M120x3 M120x4	120 160	300	415	395	305	39	485	555	326	70	85	10	194	266	140 160
280²⁾	180 200	615,44	361,10 301,44	744	G1 1/2 M48x2	M130x3 M150x4	130 190	325	450	425	343	39	520	590	375	65	95	10	210	282	160 180
320	200 220	803,84	489,84 423,90	815	G1 1/2 M48x2	- M160x4	- 200	365	510	490	394	45	600	680	431	65	120	10	243	287	180 200

¹⁾ Rod thread A or B is possible for each piston rod diameter

²⁾ Minimum stroke of 31 due to production. Shorter stroke lengths possible by using a spacer bush

Differential Cylinder ZBD 2512 (CDH1)

Mounting type MF4 – round flange at cylinder cap



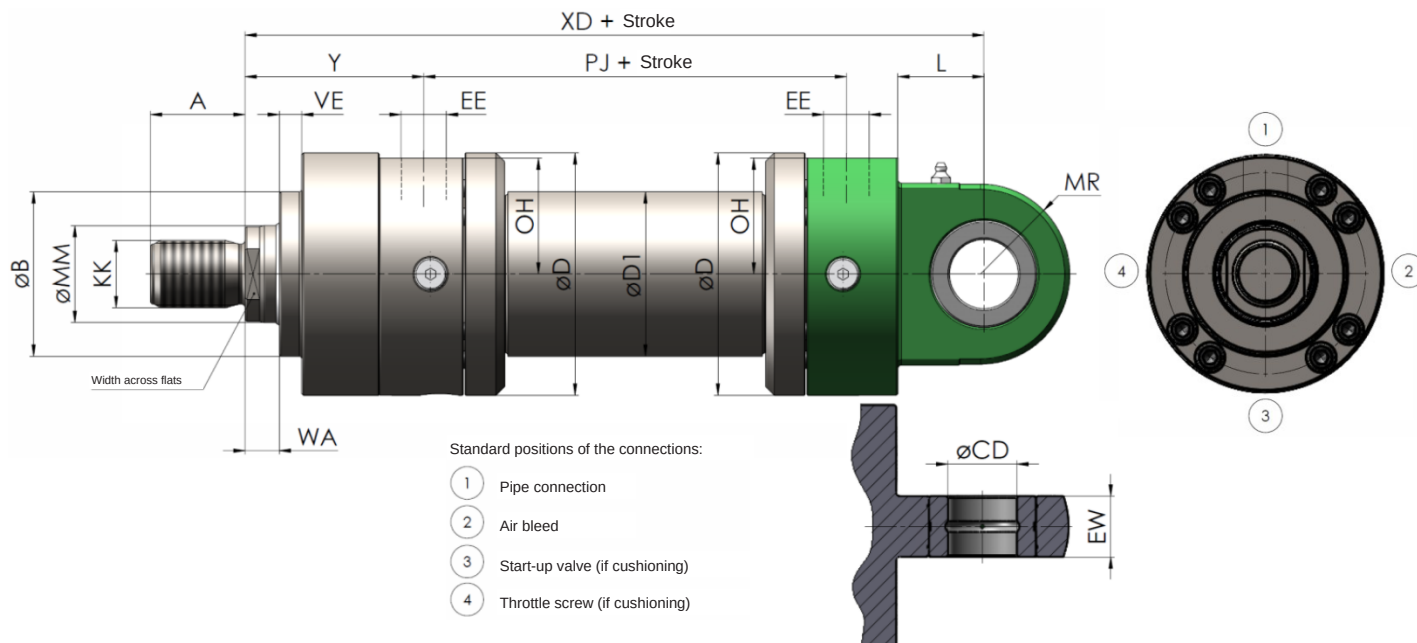
Piston ø (mm)	Rod ø MM (mm)	Piston area A ₁ (cm ²)	Annular area A2 (cm ²)	ZP + stroke	Pipe connection EE Whitworth pipe thread/ Metric thread	KK A/B ¹⁾	A max. A/B	ø Bf8	ø RD e8	ø D	WA	VE	ø D1 max.	ø FB H13	ø FC js13	ø UC -1	PJ + stroke	NF	VD	OH	Y	Width across flats
40	22 28	12,56	8,76 6,41	256	G1/2 M22x1,5	M16x1,5 M18x2	16 30	52	90	88	14	20	52	9	108	130	120	30	5	41	79	16 22
50	28 36	19,63	13,47 9,45	264	G1/2 M22x1,5	M22x1,5 M24x2	22 35	65	110	102	18	16	62	11	130	160	120	30	5	48,5	87	22 30
63	36 45	31,16	20,98 15,26	297	G3/4 M27x2	M28x1,5 M30x2	28 45	75	130	120	22	17	78	13,5	155	185	133	35	5	56,5	100	30 36
80	45 56	50,24	34,34 25,62	315	G3/4 M27x2	M35x1,5 M39x3	35 55	95	145	140	20	13	95	13,5	170	200	146	35	5	67	104	36 46
100	56 70	78,50	53,88 40,04	375	G1 M33x2	M45x1,5 M50x3	45 75	115	175	170	30	20	125	17,5	205	245	171	45	5	82	124	46 60
125	70 90	122,66	84,19 59,07	432	G1 1/4 M42x2	M58x1,5 M64x3	58 95	135	210	206	32	17	150	22	245	295	205	50	5	99	135	60 75
140	90 100	153,86	90,28 75,36	475	G1 1/4 M42x2	M65x1,5 M80x3	65 110	155	230	226	35	22	170	22	265	315	219	50	10	109,5	156	75 85
160	100 110	200,96	122,46 105,98	535	G1 1/2 M48x2	M80x2 M90x3	80 120	200	275	265	40	80	190	30	325	385	240	60	10	129	185	85 95
180	110 125	254,34	159,36 131,68	585	G1 1/2 M48x2	M100x2 M100x3	100 140	220	300	292	40	90	210	30	360	420	264	70	10	142,5	199	95 110
200	125 140	314,00	191,34 160,14	615	G1 1/2 M48x2	M110x2 M110x4	110 150	235	320	310	40	95	235	33	375	445	278	75	10	152	205	110 120
220	140 160	379,94	226,08 178,98	720	G1 1/2 M48x2	M120x3 M120x4	120 160	270	370	355	40	115	273	33	430	490	326	85	10	174	242	120 140
250	160 180	490,63	289,67 236,29	744	G1 1/2 M48x2	M120x3 M120x4	120 160	300	415	395	40	125	305	39	485	555	326	85	10	194	266	140 160
280 ²⁾	180 200	615,44	361,10 301,44	839	G1 1/2 M48x2	M130x3 M150x4	130 190	325	450	425	40	130	343	39	520	590	375	95	10	210	282	160 180
320	200 220	803,84	489,84 423,90	935	G1 1/2 M48x2	- M160x4	- 200	365	510	490	40	155	394	45	600	680	431	120	10	243	287	180 200

¹⁾ Rod thread A or B is possible for each piston rod diameter

²⁾ Minimum stroke of 31 due to production. Shorter stroke lengths possible by using a spacer bush

Differential Cylinder ZBD 2512 (CDH1)

Mounting type MP3 – swivel eye at cylinder cap

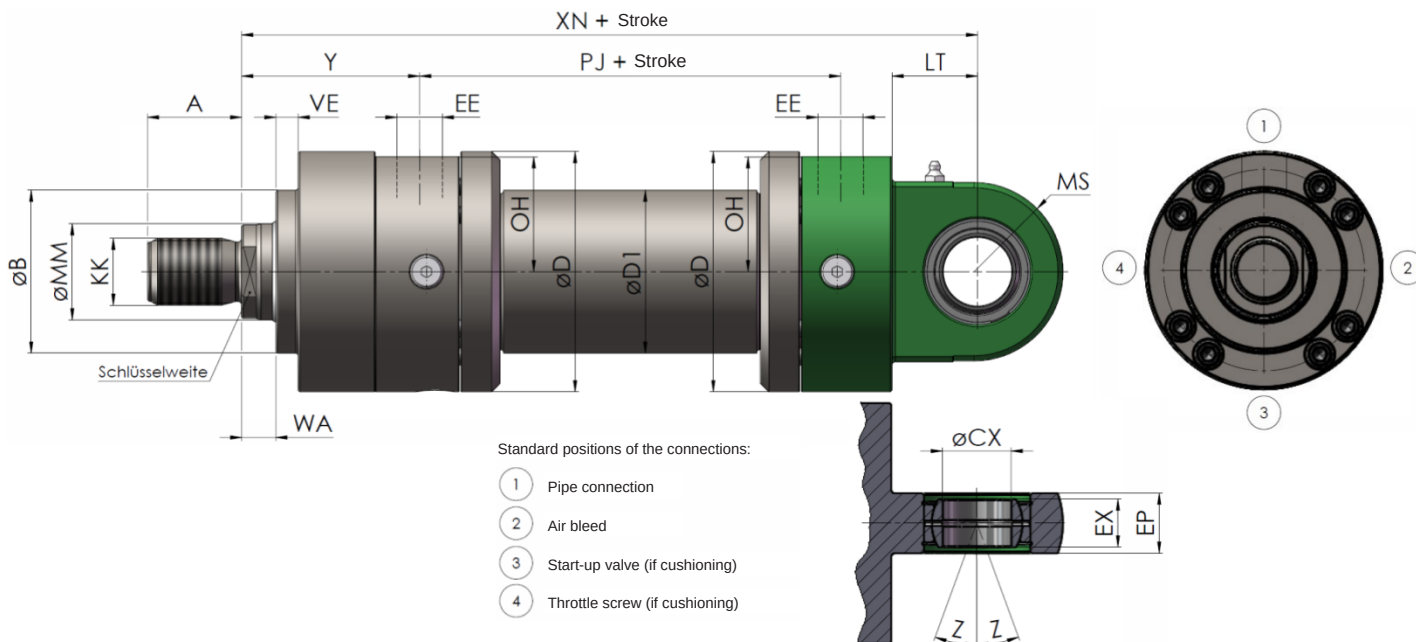


Piston ø (mm)	Rod ø MM (mm)	Piston area A 1 (cm²)	Annular area A2 (cm²)	XD + stroke	Pipe connection Whitworth pipe thread/ Metric thread	EE Whitworth pipe thread/ Metric thread	Rod thread KK A/B ¹⁾	Amax. A/B	ø Bf8	ø CD H11	ø D	ø D1 max.	EW h12	L min.	MR max.	PJ + stroke	VE	WA	OH	Y	Width across flats
40	22 28	12,56	8,76 6,41	252	G1/2 M22x1,5	M16x1,5 M18x2	16 30	52	25	88	52	23	32,5	31	120	20	14	41	79	16 22	
50	28 36	19,63	13,47 9,45	265	G1/2 M22x1,5	M22x1,5 M24x2	22 35	65	30	102	62	28	37,5	36	120	16	18	48,5	87	22 30	
63	36 45	31,16	20,98 15,26	302	G3/4 M27x2	M28x1,5 M30x2	28 45	75	35	120	78	30	45	42	133	17	22	56,5	100	30 36	
80	45 56	50,24	34,34 25,62	330	G3/4 M27x2	M35x1,5 M39x3	35 55	95	40	140	95	35	50	52	146	13	20	67	104	36 46	
100	56 70	78,50	53,88 40,04	385	G1 M33x2	M45x1,5 M50x3	45 75	115	50	170	125	40	60	65	171	20	30	82	124	46 60	
125	70 90	122,66	84,19 59,07	447	G1 1/4 M42x2	M58x1,5 M64x3	58 95	135	60	206	150	50	70	70	205	17	32	99	135	60 75	
140	90 100	153,86	90,28 75,36	490	G1 1/4 M42x2	M65x1,5 M80x3	65 110	155	70	226	170	55	75	82	219	22	35	109,5	156	75 85	
160	100 110	200,96	122,46 105,98	550	G1 1/2 M48x2	M80x2 M90x3	80 120	200	80	265	190	60	85	95	240	80	40	129	185	85 95	
180	110 125	254,34	159,36 131,68	610	G1 1/2 M48x2	M100x2 M100x3	100 140	220	90	292	210	65	90	113	264	90	40	142,5	199	95 110	
200	125 140	314,00	191,34 160,14	645	G1 1/2 M48x2	M110x2 M110x4	110 150	235	100	310	235	70	115	125	278	95	40	152	205	110 120	

¹⁾ Rod thread A or B is possible for each piston rod diameter

Differential Cylinder ZBD 2512 (CDH1)

Mounting type MP5 – spherical eye at cylinder cap



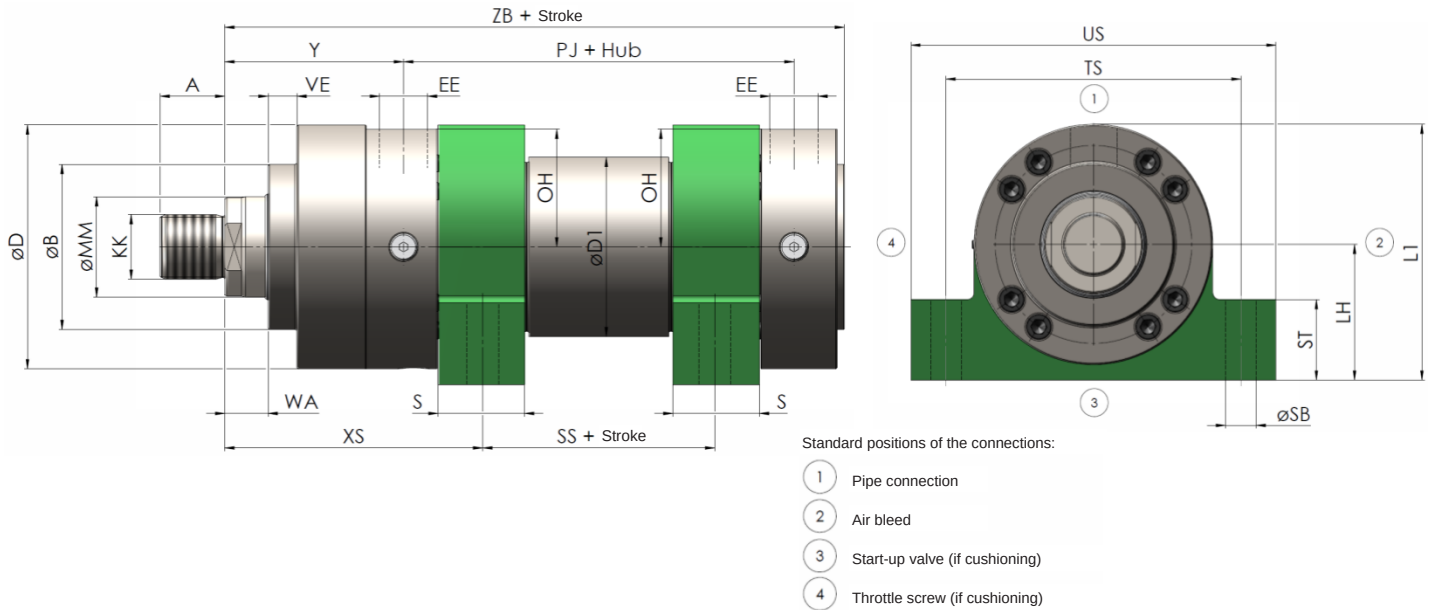
Piston $\varnothing$ (mm)	Rod $\varnothing$	Piston area A (cm ²)	Annular area $A2$ (cm ²)	XN + stroke	Pipe connection Whitworth pipe thread/ Metric thread	Rod thread KK A/B ²⁾	A max. A/B	$\varnothing B f8$	$\varnothing CX$	$\varnothing D$	$\varnothing D1$ max.	EX h12	EP -0,1	Z	LT min.	MS max.	PJ + stroke	VE	WA	OH	Y	Width across flats
40	22 28	12,56	8,76 6,41	252	G1/2 M22x1,5	M16x1,5 M18x2	16 30	52	25 _{-0,010}	88	52	20	23	7 °	32,5	31	120	20	14	41	79	16 22
50	28 36	19,63	13,47 9,45	265	G1/2 M22x1,5	M22x1,5 M24x2	22 35	65	30 _{-0,010}	102	62	22	28	6 °	37,5	36	120	16	18	48,5	87	22 30
63	36 45	31,16	20,98 15,26	302	G3/4 M27x2	M28x1,5 M30x2	28 45	75	35 _{-0,012}	120	78	25	30	6 °	45	42	133	17	22	56,5	100	30 36
80	45 56	50,24	34,34 25,62	330	G3/4 M27x2	M35x1,5 M39x3	35 55	95	40 _{-0,012}	140	95	28	35	7 °	50	52	146	13	20	67	104	36 46
100	56 70	78,50	53,88 40,04	385	G1 M33x2	M45x1,5 M50x3	45 75	115	50 _{-0,012}	170	125	35	40	6 °	60	65	171	20	30	82	124	46 60
125	70 90	122,66	84,19 59,07	447	G1 1/4 M42x2	M58x1,5 M64x3	58 95	135	60 _{-0,015}	206	150	44	50	6 °	70	70	205	17	32	99	135	60 75
140	90 100	153,86	90,28 75,36	490	G1 1/4 M42x2	M65x1,5 M80x3	65 110	155	70 _{-0,015}	226	170	49	55	6 °	75	82	219	22	35	109,5	156	75 85
160	100 110	200,96	122,46 105,98	550	G1 1/2 M48x2	M80x2 M90x3	80 120	200	80 _{-0,015}	265	190	55	60	6 °	85	95	240	80	40	129	185	85 95
180	110 125	254,34	159,36 131,68	610	G1 1/2 M48x2	M100x2 M100x3	100 140	220	90 _{-0,020}	292	210	60	65	5 °	90	113	264	90	40	142,5	199	95 110
200	125 140	314,00	191,34 160,14	645	G1 1/2 M48x2	M110x2 M110x4	110 150	235	100 _{-0,020}	310	235	70	70	7 °	115	125	278	95	40	152	205	110 120
220	140 160	379,94	226,08 178,98	750	G1 1/2 M48x2	M120x3 M120x4	120 160	270	110 _{-0,020}	355	273	70	80	6 °	125	140	326	115	40	174	242	120 140
250	160 180	490,63	289,67 236,29	789	G1 1/2 M48x2	M120x3 M120x4	120 160	300	110 _{-0,020}	395	305	70	80	6 °	140	158	326	125	40	194	266	140 160
280¹⁾	180 200	615,44	361,10 301,44	884	G1 1/2 M48x2	M130x3 M150x4	130 190	325	120 _{-0,020}	425	343	85	90	6 °	150	178	375	130	40	210	282	160 180
320	200 220	803,84	489,84 423,90	980	G1 1/2 M48x2	- M160x4	- 200	365	140 _{-0,020}	490	394	90	110	7 °	175	200	431	155	40	242	287	180 200

¹⁾ Minimum stroke of 31 mm due to production. Shorter stroke lengths possible by using a spacer bush.

²⁾ Rod thread A or B is possible for each piston rod diameter

Differential Cylinder ZBD 2512 (CDH1)

Mounting type MS2 – foot mounting

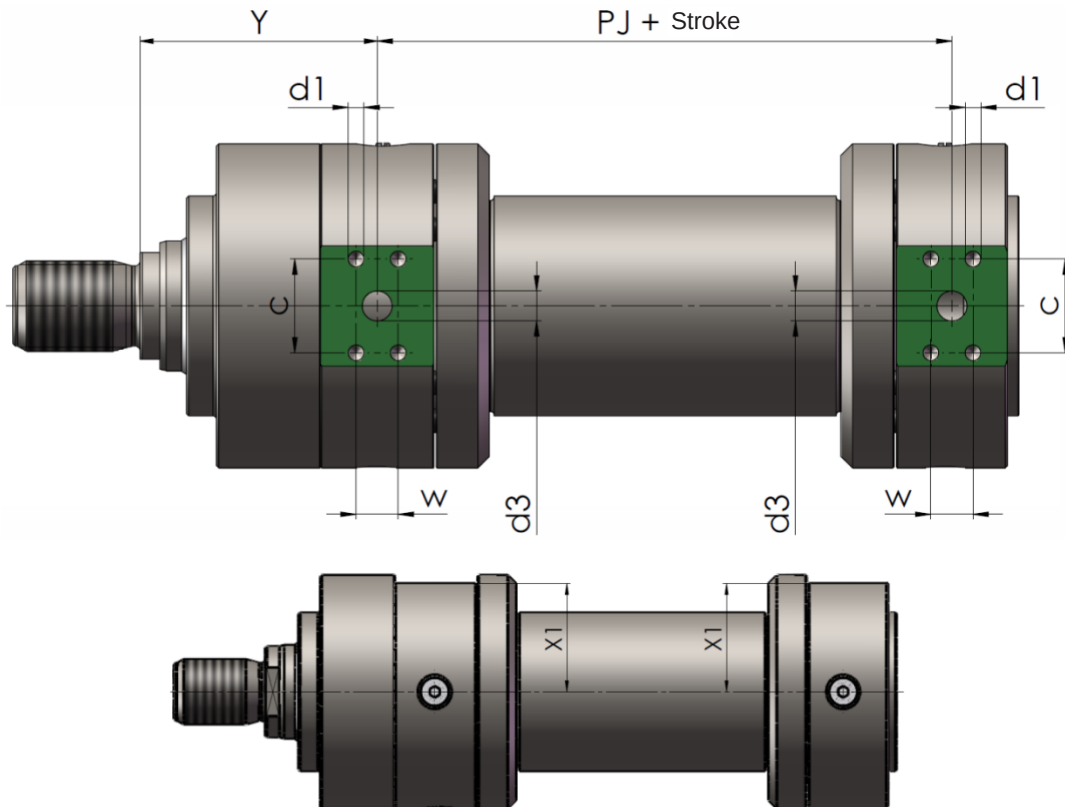


Piston $\varnothing$ (mm)	Rod $\varnothing$ (mm)	Piston area A (cm ²)	Annular area A2 (cm ²)	ZB + stroke	Pipe connection Whitworth pipe thread/ Metric thread	Rod thread KK A/B ¹⁾	A max. A/B	$\varnothing B f8$	VE	WA	LH	$\varnothing D$	$\varnothing D1$ max.	S	$\varnothing SB$ H13	ST	PJ + stroke	TS js13	L1	SS + stroke	US -1	XS	OH	Y	Minimum stroke
40	22 28	12,56	8,76 6,41	226	G1/2 M22x1,5	M16x1,5 M18x2	16 30	52	20	14	45	88	52	30	11	32	120	110	93	50	140	114	41	79	-
50	28 36	19,63	13,47 9,45	233	G1/2 M22x1,5	M22x1,5 M24x2	22 35	65	16	18	55	102	62	35	11	37	120	130	110	45	161	124,5	48,5	87	-
63	36 45	31,16	20,98 15,26	262	G3/4 M27x2	M28x1,5 M30x2	28 45	75	17	22	65	120	78	40	13,5	42	133	150	129	49	183	142	56,5	100	-
80	45 56	50,24	34,34 25,62	280	G3/4 M27x2	M35x1,5 M39x3	35 55	95	13	20	75	140	95	50	17,5	47	146	180	149	52	220	151	67	104	2
100	56 70	78,50	53,88 40,04	330	G1 M33x2	M45x1,5 M50x3	45 75	115	20	30	90	170	125	60	22	57	171	210	181	61	260	179	82	124	3
125	70 90	122,66	84,19 59,07	382	G1 1/4 M42x2	M58x1,5 M64x3	58 95	135	17	32	105	206	150	70	26	67	205	255	215	75	313	200	99	135	-
140	90 100	153,86	90,28 75,36	420	G1 1/4 M42x2	M65x1,5 M80x3	65 110	155	22	35	115	226	170	85	30	72	219	290	235	70	359	230,5	109,5	156	19
160	100 110	200,96	122,46 105,98	475	G1 1/2 M48x2	M80x2 M90x3	80 120	200	80	40	135	265	190	105	33	77	240	330	277	65	402	272,5	129	185	44
180	110 125	254,34	159,36 131,68	515	G1 1/2 M48x2	M100x2 M100x3	100 140	220	90	40	150	292	210	115	40	92	264	360	305	69	445	296,5	142,5	199	50
200	125 140	314,00	191,34 160,14	535	G1 1/2 M48x2	M110x2 M110x4	110 150	235	95	40	160	310	235	125	40	97	278	385	322	73	471	307,5	152	205	56
220	140 160	379,94	226,08 178,98	635	G1 1/2 M48x2	M120x3 M120x4	120 160	270	115	40	185	355	273	155	45	102	326	445	373	75	541	367,5	174	242	100
250	160 180	490,63	289,67 236,29	659	G1 1/2 M48x2	M120x3 M120x4	120 160	300	125	40	205	395	305	155	52	112	326	500	414	75	610	391,5	194	266	100
280	180 200	615,44	361,10 301,44	744	G1 1/2 M48x2	M130x3 M150x4	130 190	325	130	40	225	425	343	155	52	127	375	530	449	124	641	407,5	210	282	171
320	200 220	803,84	489,84 423,90	815	G1 1/2 M48x2	- M160x4	- 200	365	155	40	255	490	394	190	62	142	431	610	512	125	732	440	243	287	85

¹⁾ Rod thread A or B is possible for each piston rod diameter

Differential Cylinder ZBD 2512 (CDH1)

Flange connections

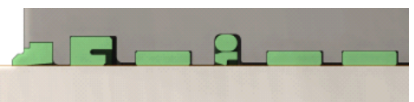
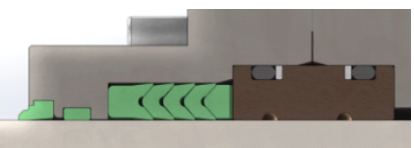
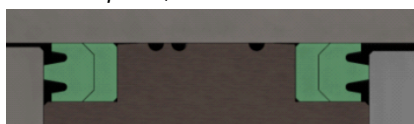
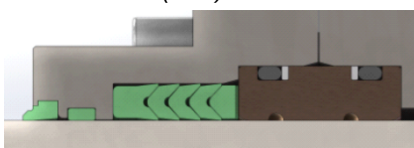
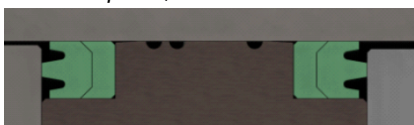


Hole pattern for SAE flanges
ISO 6162 / SAE J518 Code 62 (6000 psi / 415 bar)

Piston Ø	Y	PJ + stroke	X1	Ød3	c ± 0,25	w ± 0,25	Ød1	t1 min.
40	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-
80	102,5	149	65	13	40,5	18,2	M8	15
100	124	171	80,5	13	40,5	18,2	M8	15
125	135	205	97,5	19	50,8	23,8	M10	17
140	152	227	107	25	57,2	27,8	M12	22
160	184	242	127	25	57,2	27,8	M12	22
180	199	264	139,5	32	66,6	31,8	M14	24
200	205	278	149	32	66,6	31,8	M14	24
220	242	326	168	38	79,3	36,5	M16	26
250	266	326	189	38	79,3	36,5	M16	26
280	282	375	204	38	79,3	36,5	M16	26
320	287	431	236	51	96,8	44,5	M20	34

Differential Cylinder ZBD 2512 (CDH1)

Seal variants – schematic representation

Rod seal	Code letter	Piston seal
<i>U-cup seal made of polyurethane and Teflon seal with O-ring made of Perbunan</i> 	FG Standard version Temperature range: -30 °C to +80 °C Hydraulic fluid: Mineral oil Sliding speed: ≤ 1 m/s Application: Universal industrial use Higher speeds, for low-stick-slip stroke motion	<i>Teflon seal with O-ring made of Perbunan</i> 
<i>Teflon seal with O-ring made of Perbunan in tandem version</i> 	TG Temperature range: -30 °C to +80 °C Hydraulic fluid: Mineral oil Sliding speed: ≤ 1 m/s Application: For servo systems, at high speed, for stick-slip-free stroke motion	<i>Teflon seal with O-ring made of Perbunan</i> 
<i>U-cup seal made of polyurethane and Teflon seal with O-ring made of Perbunan</i> 	FE Temperature range: -30 °C to +80 °C Hydraulic fluid: Mineral oil Sliding speed: ≤ 0.5 m/s Application: Universal industrial use, also under difficult working conditions, no stick-slip-free working motion	<i>Seal kit 2-piece, fabric/Perbunan</i> 
<i>Chevron seal kit</i> 	LE Temperature range: -40 °C to +100 °C Hydraulic fluid: Mineral oil Sliding speed: ≤ 0.5 m/s Application: Universal industrial use, also under difficult working conditions, no stick-slip-free working motion	<i>Seal kit 2-piece, fabric/Perbunan</i> 
<i>Teflon seal with O-ring made of fluoro rubber (FPM) in Tandem version</i> 	TVGV Temperature range: -20 °C to +200 °C Hydraulic fluid: Mineral oil, HFD fluids Sliding speed: ≤ 1 m/s Application: At higher temperatures (up to +200 °C), no stick-slip-free stroke motion	<i>Teflon seal with O-ring made of fluoro rubber (FPM)</i> 
<i>Chevron seal kit (FPM)</i> 	LVEV Temperature range: -20 °C to +130 °C Hydraulic fluid: Mineral oil, HFD fluids Sliding speed: ≤ 0.5 m/s Application: At higher temperatures (up to +130 °C), no stick-slip-free stroke motion	<i>Seal kit 2-piece, FPM</i> 

Differential Cylinder ZBD 2512 (CDH1)

Model code:

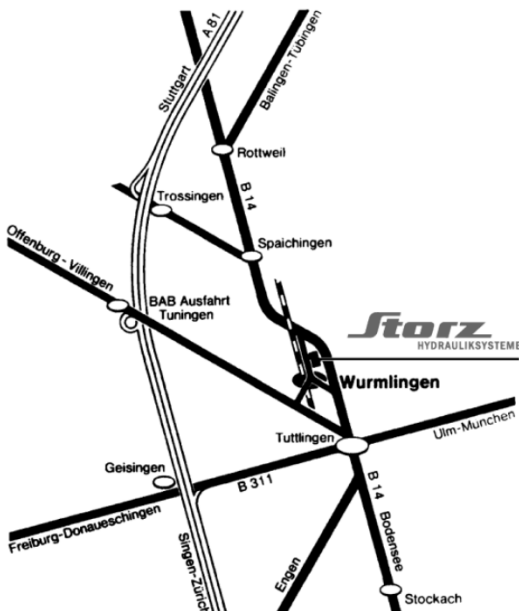
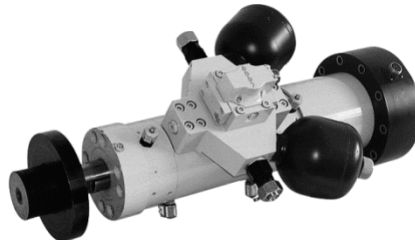
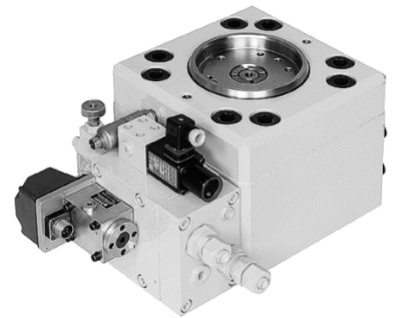
ZBD 2512																			
Double-acting hydraulic cylinders																			
Nominal pressure 250 bar (25 MPa)																			
optionally with or without end position cushioning																			
Installation dimensions interchangeable with CDH1																			
Piston diameter in mm																			
Piston rod diameter in mm																			
Mounting type																			
MT4	Trunnion (state dimension XV when ordering)																		
MF3	Round flange, head end																		
MF4	Round flange, cap end																		
MP3	Swivel eye at cylinder cap																		
MP5	Spherical eye at cylinder cap																		
MS2	Foot mounting																		
Cylinder stroke in mm																			
Seal variant																			
FG	Standard version, U-cup seal + Teflon slide ring / Teflon seal																		
TG	Teflon slide ring in tandem version / Teflon seal																		
FE	U-cup seal + Teflon slide ring / cylinder seal kit																		
LE	Seal kit / cylinder seal kit NBR / fabric																		
TVGV	Teflon slide ring in tandem version / Teflon seal (Viton version)																		
LVEV	Seal kit / cylinder seal kit (Viton version)																		
End position cushioning, head end																			
yes	Position of throttle screw standard version side	4	Option: 1,2,3																
no	0																		
End position cushioning, cap end																			
yes	Position of throttle screw standard version side	4	Option: 1,2,3																
no	0																		
Piston rod surface																			
B	Standard version, hard chrome-plated																		
C	induction-hardened and hard chrome-plated																		
Piston rod end																			
1	Piston rod thread A																		
2	Piston rod thread B																		
Piston rod material																			
C	Standard version, structural/tempered steel																		
N	Stainless steel (only with surface B)																		
Version of pipe connection																			
G	Standard version, Whitworth pipe thread																		
M	Metric ISO thread																		
D	Flange connection (for SAE hole pattern see data sheet flange connections)																		
Pipe connection, position head end																			
Standard version side	1	Option: 2,3,4																	
Pipe connection, position cap end																			
Standard version side	1	Option: 2,3,4																	
Air bleed																			
E	Standard version, bleed screw	Option: M Gauge coupling																	
Air bleed, position head end																			
Standard version side	2	Option: 1,3,4																	
Air bleed, position cap end																			
Standard version side	2	Option: 1,3,4																	
Version code		(specified by the manufacturer)																	

Example: Double-acting hydraulic cylinder 250 bar nominal pressure with the following data:
Piston $\varnothing$ 80 mm, rod $\varnothing$ 56 mm, mounting type round flange head end, stroke 300 mm, seal variant FG, end position cushioning yes,
Position of throttle screw head end side 4, cap end side 4, piston rod surface hard chrome-plated, piston rod end M39x3,
Piston rod material stainless, pipe connection version pipe thread, position of pipe connection head end side 1,
cap end side 1, bleed screw, position of bleed screw head end side 2, cap end side 2

ZBD 2512-80/56-MF3-300-FG-44-B2N-G11-E22



Hydraulic cylinders to DIN/ISO
Hydraulic standard cylinders
Hydraulic telescopic cylinders
Hydraulic cylinders with position measuring systems
Hydraulic coiler cylinders
Test-machine cylinders
Special cylinders for all fields of application
Standardized mounting parts
Hydraulic power units and components
Plant engineering



Storz
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