

Hydraulic Buffer type IPS



The **newly developed hydraulic buffer IPS series** are distinguished from others by an integrated automatic changeover valve. The buffer can be approached in normal operation with 40-50% of the nominal speed v_{nom} , without using the full hydraulic buffer force. Only in case of impact at a higher speed than 50% v_{nom} , the full decelerating force is built up immediately, so that the vehicle can be braked perfectly.

Furthermore, this buffer series is optimal useable in surroundings with low temperature range **down to -50 °C**. This is possible because of extra developed sealing elements and the use of special working fluids.

The intelligent buffer system is a self-contained and thus usable in any operating position damping element. Moving masses can be decelerated controlled by the shortest route. Thus this buffer-series can be used for applications including general machinery, smelting works, materials handling, storage and transportation technology, as well as handling technique.

The foreign-energy-independent operation, and very high capacity through the heavy construction distinguish this particular buffer system..

Optimized to the particular load case coordination is facilitated by the modular design, it has 40 mm, 50 mm and 63 mm piston diameter and stroke lengths from 200 mm to 1600 mm. Depending on the size and stroke deceleration forces up to 220 kN are possible.



Another feature of this buffer type is the **very low static restoring force**. Compared to other buffer systems the stroke end point runs only slightly uphill. This property allows it to drive into the buffer operatively and depressing the piston rod almost completely at low power. Thus, the buffer is particularly suitable for use in storage/retrieval systems and similar equipment where the I buffer travel is involved in the work area and the standing of the buffer device may not be pushed out of position.

Optionally, a **sensor for monitoring the piston rod provision** is available.

The hydraulic buffer **IPS** by default, can be delivered in three mounting styles: front flange **EF**, bottom flange **FF** or pedestal flange **SF**. Special attachments are available on request.

The piston rod has a hard chrome layer of about 25 μm thickness. The buffer itself is by default in the shade RAL 5009 azure blue with a layer thickness of 80 mm.

Hydraulic Buffer type of **IPS** can be delivered ready for installation with a special hydraulic fluid, the installation position of the buffer is arbitrary, since it is in a completely closed system. Some versions of hydraulic buffers the **IPS** design will allow impact speeds of up to 4 m/s, even in an emergency up to 20 m/s.

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Hydraulic Buffer IPS 50

Patent pending



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Capacity data:

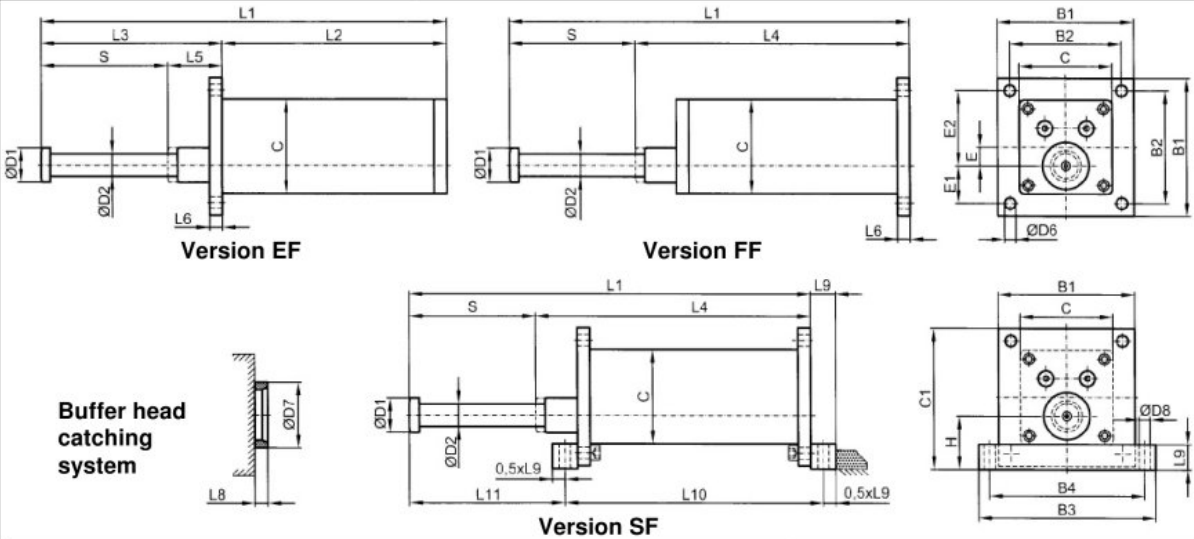
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stroke s [mm]	buffer force max. ⁵⁾ [kN] ⁶⁾		max. energy absorption ⁵⁾ [kJ/stroke] ^{1) 6)}		max. energy absorption [kJ/h] ²⁾	static recoil forces		max. angular deviation		weight approx..	
						beginning of stroke [kN] ³⁾	end of stroke [kN] ^{3) 7)}	EF, SF [°] ⁴⁾	FF [°] ⁴⁾	EF, FF [kg]	SF [kg]
100	150	150	13,6	13,6	1800	0,85	1,2 to 10	5,0	4,0	43	55
200	140	150	25,5	27,3	2400			4,0	3,0	50	62
300	120	140	32,7	38,2	3000			3,4	2,3	57	69
400	100	140	36,4	50,9	3600			3,0	1,9	66	78
500	90	130	40,9	59,1	4200			2,8	1,7	74	86
600	80	110	43,6	60,0	4600			2,6	1,5	82	94
800	50	90	36,4	65,5	5200			2,0	1,0	100	112
1000	40	80	36,4	72,7	5500			1,7	0,9	118	130
1200	34	70	37,1	76,3	5700	1,3	0,7	136	148		

¹⁾ data for standard characteristic k=1,1
²⁾ at 30 °C ambient temperature
³⁾ at 5 bar gas pressure (nitrogen)

⁴⁾ at max. buffer force
⁵⁾ without buffer head catching system
⁶⁾ with buffer head catching system

⁷⁾ The Progression of the static recoil force can be regulate by assembling. Standard: low. Modifications reserved.



Dimensions: Intermediate lengths and special designs on request! in mm

stroke s	B1	B2	B3	B4	C	C1	D1	D2	D6	D7	D8	E	E1	E2	H	L1	L2	L3	L4	L5	L6	L8	L9	L10	L11	
100																470	270	200	370						330	160
200																670	370	300	470						430	260
300																885	485	400	585						545	360
400																1100	600	500	700						660	460
500	240	200	320	280	180	245	70	45	18	130	22	35	65	135	90	1315	715	600	815	100	20	25	40	775	560	
600																1530	830	700	930						890	660
800																1960	1060	900	1160						1120	860
1000																2390	1290	1100	1390						1350	1060
1200																2820	1520	1300	1620						1580	1260

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Hydraulic Buffer IPS 40

Patent pending



Capacity data:

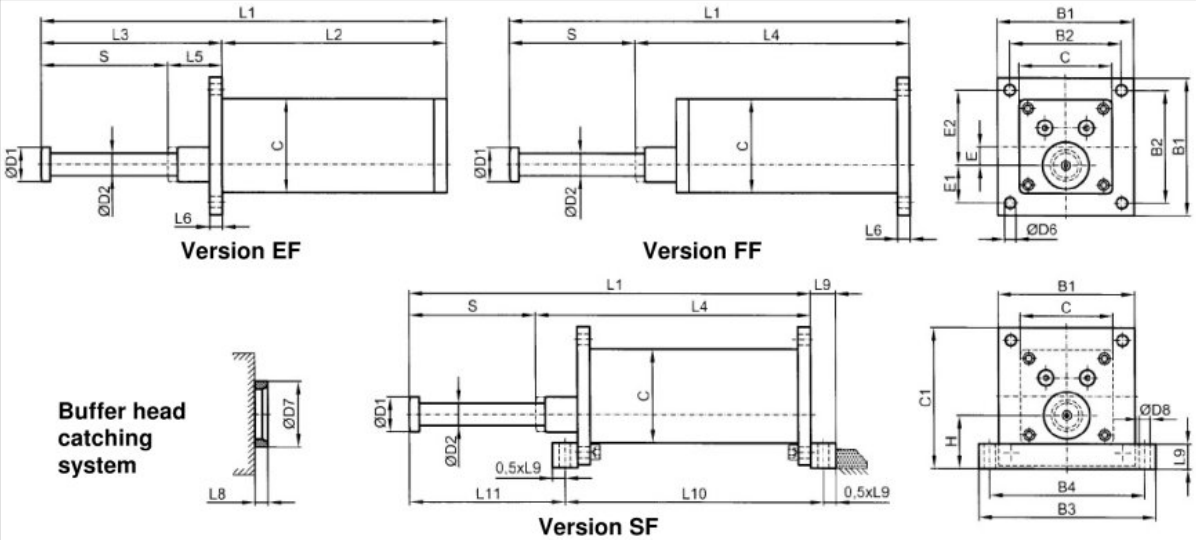
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stroke s [mm]	buffer force max. ⁵⁾ [kN] ⁶⁾		max. energy absorption ⁵⁾ [kJ/stroke] ¹⁾		max. energy absorption/h [kJ/h] ²⁾	Static recoil forces		max. angular deviation		weight approx.		
	⁵⁾ [kN] ⁶⁾	⁵⁾ [kJ/stroke] ⁶⁾	⁵⁾ [kJ/stroke] ⁶⁾	⁵⁾ [kJ/stroke] ⁶⁾		beginning of stroke [kN] ³⁾	end of stroke [kN] ^{3) 7)}	EF, SF [°] ⁴⁾	FF [°] ⁴⁾	EF, FF [kg]	SF [kg]	
100	80	80	7,3	7,3	500	0,55	0,72 to 6,6	5,0	4,0	31	42	
200	70	80	12,7	14,5				1000	4,0	3,0	37	48
300	60	75	16,4	20,4				1500	3,4	2,3	44	55
400	50	70	18,2	25,5				2000	3,0	2,0	50	61
500	45	66	20,5	30,0				2300	2,8	1,8	58	69
600	40	65	21,8	35,5				2600	2,5	1,5	64	75
800	25	55	18,2	40,0				3000	1,5	0,5	78	89
1000	20	50	18,2	45,4				3200	1,0	0,3	91	102

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Intermediate lengths and special designs on request!

in mm

stroke s	B1	B2	B3	B4	C	C1	D1	D2	D6	D7	D8	E	E1	E2	H	L1	L2	L3	L4	L5	L6	L8	L9	L10	L11
100																440	254	186	340					314	146
200																640	354	286	440					414	246
300																855	469	386	555					529	346
400	220	180	280	250	150	225	55	36	18	105	18	30	60	120	85	1055	569	486	655	86	20	20	40	629	446
500																1270	684	586	770					744	546
600																1470	784	686	870					844	646
800																1900	1014	886	1100					1074	846
1000																2315	1229	1086	1315					1289	1046

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Hydraulic Buffer IPS 63

Patent pending



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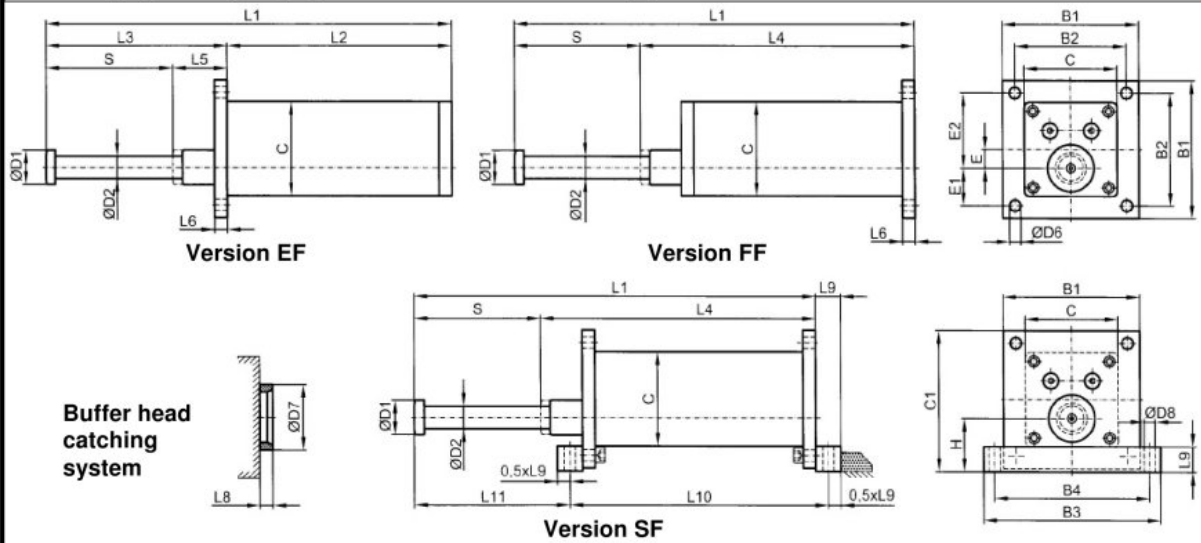
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stroke s [mm]	buffer force max. ⁵⁾ [kN] ⁶⁾		max. energy absorption ⁵⁾ [kJ/stroke] ^{1) 6)}		max. energy absorption/h [kJ/h] ²⁾	static recoil force beginning of stroke [kN] ³⁾		end of stroke [kN] ^{3) 7)}	max. angular deviation EF, SF [°] ⁴⁾		weight approx. EF, FF [kg]		SF [kg]
200	220	220	40,0	40,0	3000	1,5	2,2 to 20	4,0	3,0	65	89		
300	180	200	49,1	54,5				4000	3,5	2,5	78	102	
400	160	200	58,2	72,7				5000	3,0	2,0	92	116	
500	160	180	72,7	81,8				6000	2,8	1,8	104	128	
600	140	180	76,4	98,2				7000	2,6	1,6	117	141	
800	100	160	72,7	116,4				9000	2,0	1,3	144	168	
1000	80	140	72,7	127,2				10000	1,5	1,0	170	194	
1200	65	120	70,9	130,9				11000	1,1	0,8	197	221	
1600	50	100	72,7	145,4				12000	0,8	0,6	225	249	

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stroke s	B1	B2	B3	B4	C	C1	D1	D2	D6	D7	D8	E	E1	E2	H	L1	L2	L3	L4	L5	L6	L8	L9	L10	L11
200																685	380	305	485					455	255
300																900	495	405	600					660	355
400																1115	610	505	715					685	455
500																1330	725	605	830					800	555
600	300	250	400	350	220	305	85	60	22	150	27	45	80	170	110	1545	840	705	945	105	25	25	50	915	655
800																1975	1070	905	1175					1145	855
1000																2420	1315	1105	1420					1390	1055
1200																2850	1545	1305	1650					1620	1255
1600																3710	2005	1705	2110					2080	1655

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