

®



ABAG-Technik GmbH

oelhydraulik und verfahrenstechnik

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Produktinformation zu

Hydraulikzylinder / NORMZYLINDER



Pall Corporation



Industrial Filtration

Kompetenz für Anlagenbau, Betriebstechnik, Automatisierungstechnik, Globalservice
Engineering und Serviceleistung

DIN EN ISO 9001

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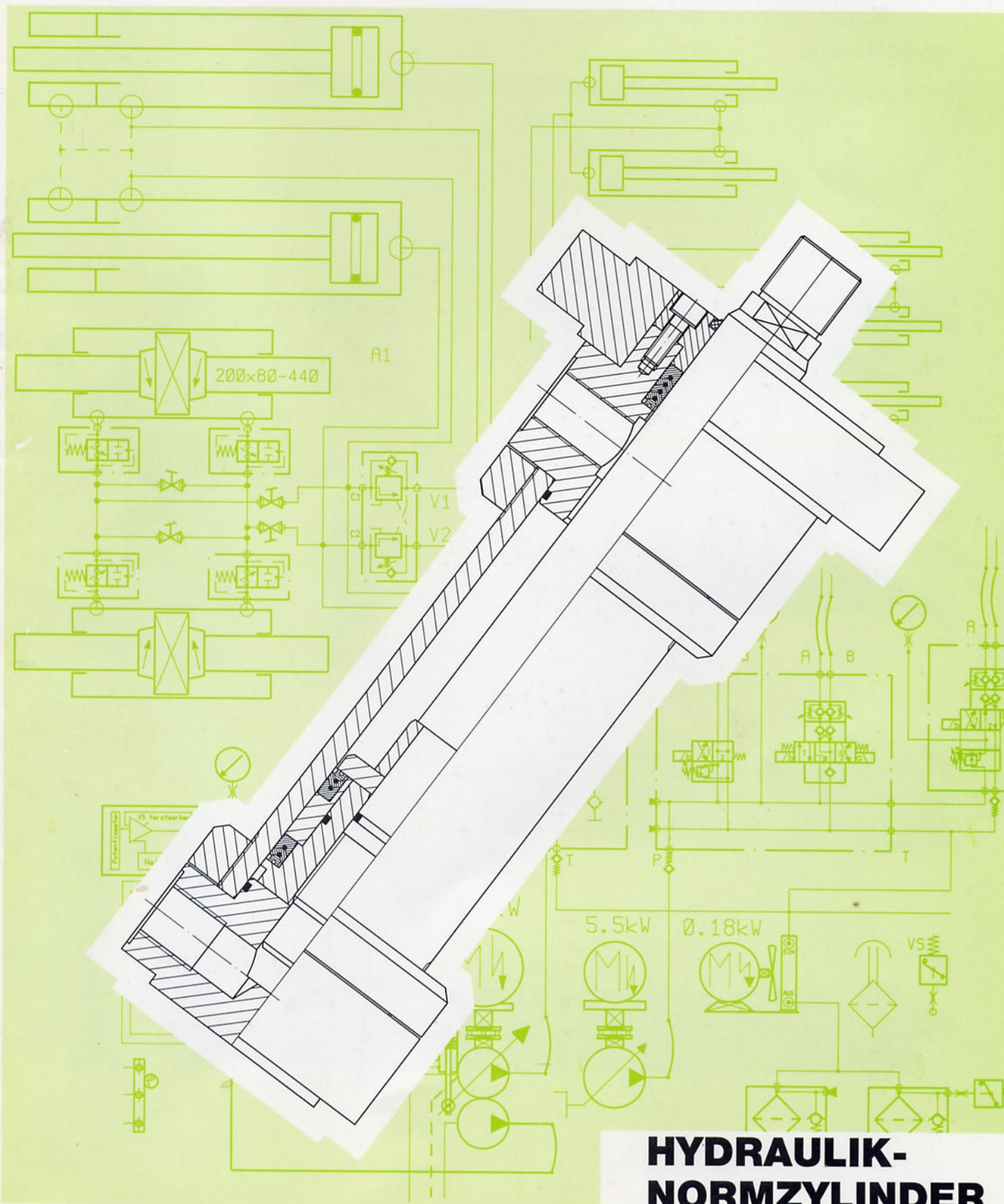
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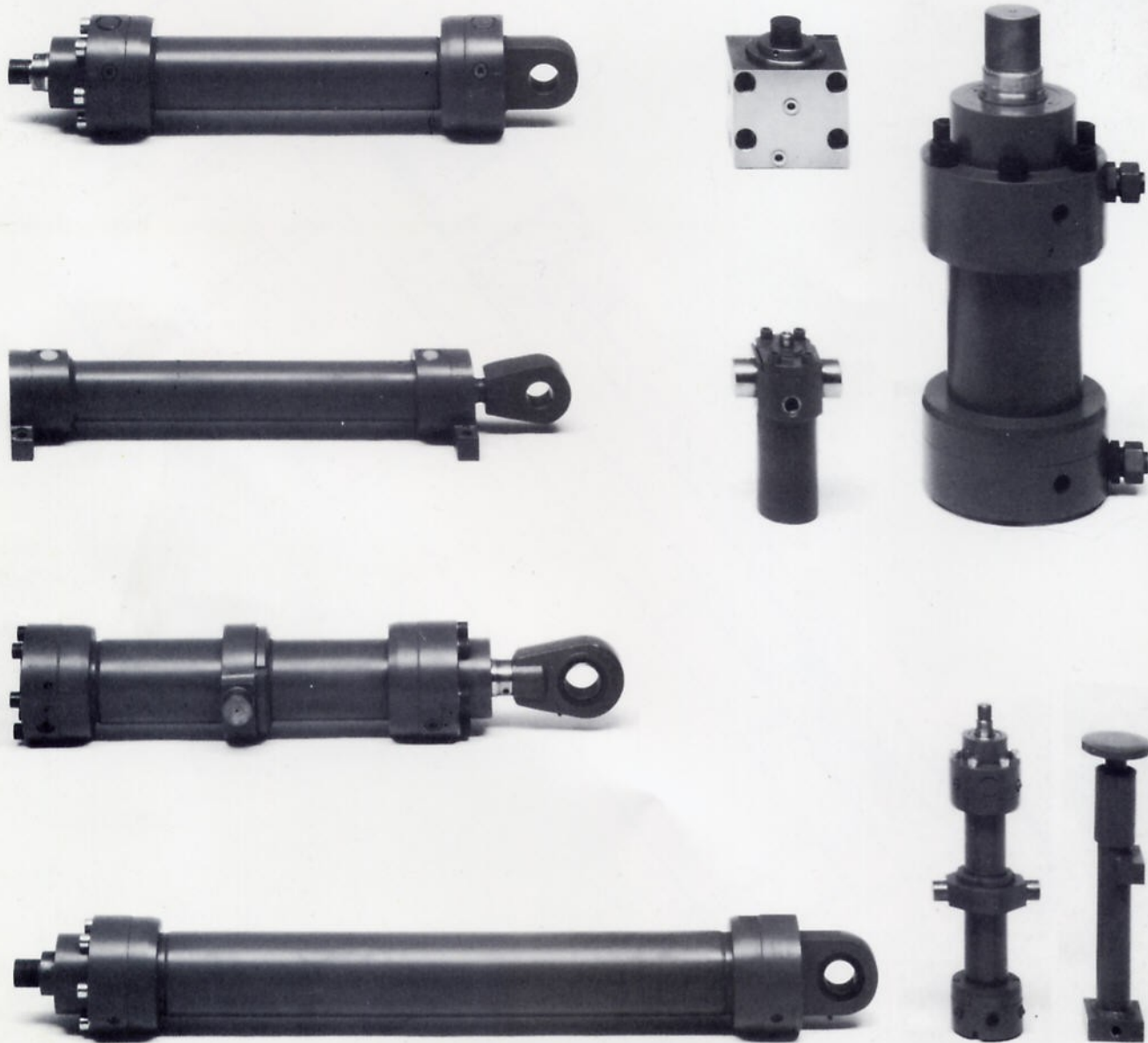
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HYDRAULIK- NORMZYLINDER

Die in diesem Katalog dargestellten Hydraulikzylinder der Baureihen ZD 400 sind Teil unseres Normzylinder-Programms. Wir liefern auch Zylinder in Sonderausführung nach Kundenspezifikation, wie zum Beispiel:

- aus Sonderwerkstoffen oder mit spezieller Oberflächenveredelung,
- mit Spezialdichtungen für besondere Medien und Temperaturbereiche,
- mit Sicherheitsklemmköpfen (TÜV geprüft, von der Berufsgenossenschaft zugelassen),
- mit Wegmeßsystemen für Proportional- und Servotechnik.



Typenschlüssel

										weitere Angaben im Klartext	
/ -											
Gerät		Funktion		Betriebsdruck		Bauform		Baureihe 250 bar		Baureihe 400 bar	
Z - Hydraulikzylinder		D - doppeltwirkend E - einfachwirkend P - Plunger G - Gleichgang		bis 250 bar - 250 bis 400 bar - 400		X - ohne Befestigung A - Schwenklager am Boden B - Gelenklager am Boden C - Flansch am Kopf D - Flansch am Boden E - Schwenkzapfen am Rohr E_k - Schwenkzapfen am Kopf E_b - Schwenkzapfen am Boden F - Fußbefestigung		Q - Servoqualität Kolbenstangengewinde o. Bez. - Standardausführung V - Hüttenwerkgewinde Kolbenstangenausführung o. Bez. - hartverchromt H - gehärtet u. verchromt N - Niro W.Nr.: 1.4057 Serienzahl 10 bis 19 = unveränderte Einbaumaße beständig gegen M - Mineralöl nach DIN S - schwer entflammbar Flüssigkeit (HS-D) W - Wasseremulsion (HS-A; HS-B; HS-C) Endlagendämpfung 1 - ohne 2 - beidseitig 3 - bodenseitig 4 - stangenseitig Anschlußgewinde R - Whitworth Rohrgewinde M - Metrisches Gewinde andere Anschlußarten auf Anfrage Hub gewünschten Hub eintragen		Kolbenstangenausführung o. Bez. - hartverchromt H - gehärtet u. verchromt N - Niro W.Nr.: 1.4057 Serienzahl 10 bis 19 = unveränderte Einbaumaße beständig gegen M - Mineralöl nach DIN S - schwer entflammbar Flüssigkeit (HS-D) W - Wasseremulsion (HS-A; HS-B; HS-C) Endlagendämpfung 1 - ohne 2 - beidseitig 3 - bodenseitig 4 - stangenseitig Anschlußgewinde R - Whitworth Rohrgewinde M - Metrisches Gewinde andere Anschlußarten auf Anfrage Hub gewünschten Hub eintragen	
Kolben ø		Kolbenstangen ø		Kolben ø		Kolbenstangen ø		Kolben ø		Kolbenstangen ø	
1,4 : 1		20 = 40/ 20		28 = 50/ 28		36 = 63/ 36		45 = 80/ 45		56 = 100/ 56	
125		70 = 125/ 70		90 = 140/ 90		100 = 160/ 100		125 = 200/ 125		140 = 200/ 140	
2 : 1		28 = 40/ 28		36 = 50/ 36		45 = 63/ 45		56 = 80/ 56		70 = 100/ 70	
125		90 = 125/ 90		100 = 140/ 100		110 = 160/ 110		140 = 200/ 140		180 = 250/ 180	

Kenngrößen der Standardausführung

Kolben- und Kolbenstangenabmessungen :	nach DIN 24 334
Kolbenstangenausführung:	C 45; hartverchromt und poliert
Anschluß- und Einbaumaße:	siehe Katalogblätter
Einbaulage:	beliebig
Druckflüssigkeit:	Mineralöl nach DIN 51 524 u. 51 525
Druckflüssigkeitstemperaturbereich:	-20°C bis +70°C
Viskositätsbereich:	2,8 cSt bis 380 cSt
Hubgeschwindigkeit v _{max} :	0,5 m/s

Nachdruck, auch auszugsweise, nur mit Quellenangabe erlaubt.

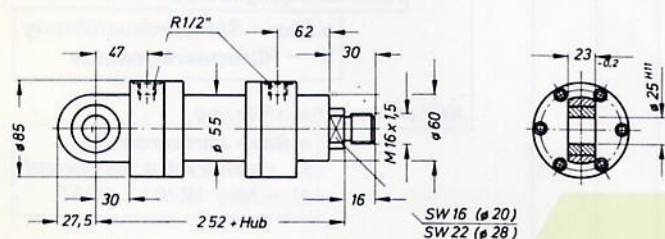
Die Angaben in diesem Katalog wurden mit größter Sorgfalt überprüft:

Trotzdem kann für eventuell fehlerhafte oder unvollständige Angaben keine Haftung übernommen werden. Änderungen vorbehalten.

Hydraulikzylinder Type ZD 250 ... 40/20/28

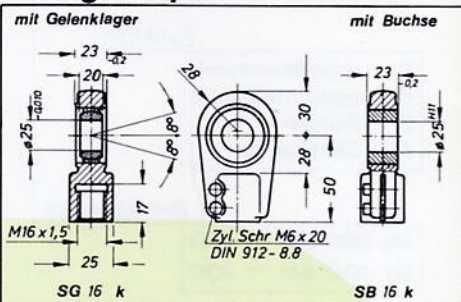
doppeltwirkend

Bauform A

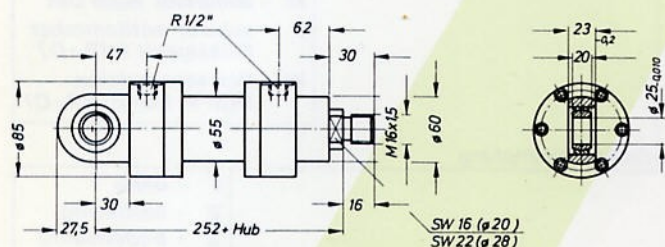


Stangenkopf

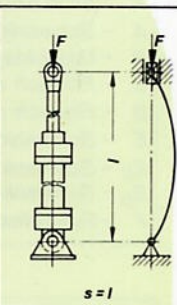
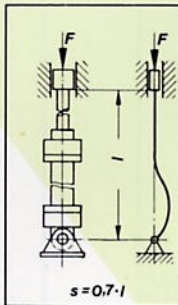
Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN)	
		ø 20	ø 28
50	628	471	320
100	1257	943	641
150	1885	1414	961
200	2514	1886	1282
250	3142*	2357	1602



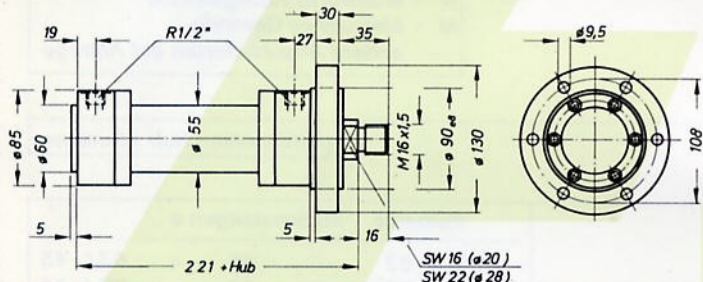
Bauform B



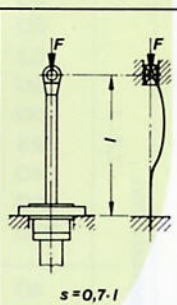
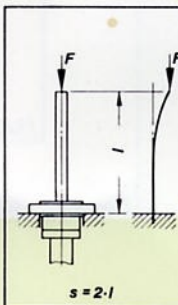
max. Hub ø 20 ø 28 (mm)	Nenn- druck (bar)	max. Hub ø 20 ø 28 (mm)
490	50	280
310	100	155
230	150	100
185	200	65
150	250	45



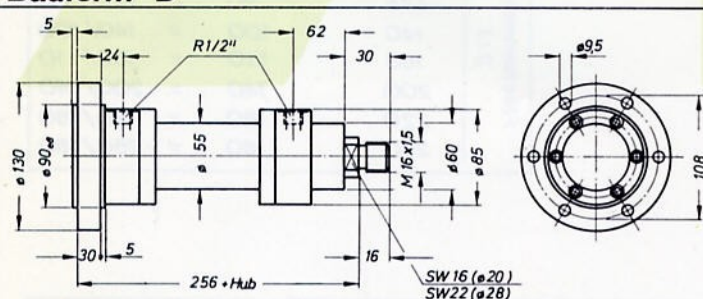
Bauform C



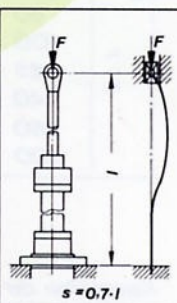
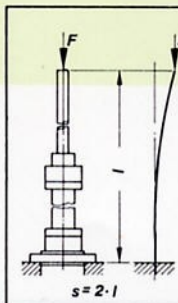
max. Hub ø 20 ø 28 (mm)	Nenn- druck (bar)	max. Hub ø 20 ø 28 (mm)
425	50	1160
300	100	800
245	150	635
210	200	550
185	250	485



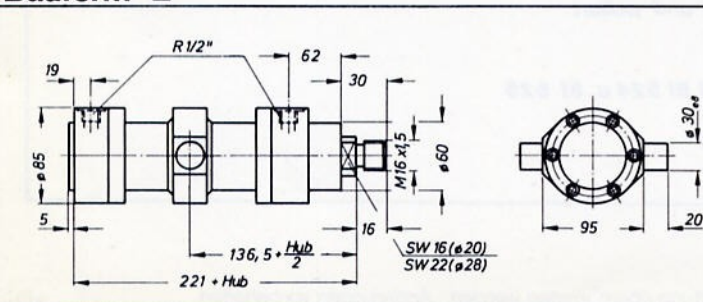
Bauform D



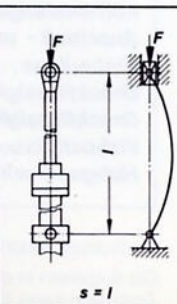
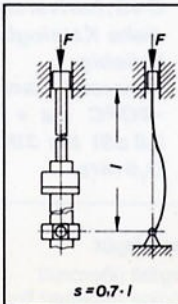
max. Hub ø 20 ø 28 (mm)	Nenn- druck (bar)	max. Hub ø 20 ø 28 (mm)
90	50	470
50	100	290
120	150	210
90	200	160
65	250	125



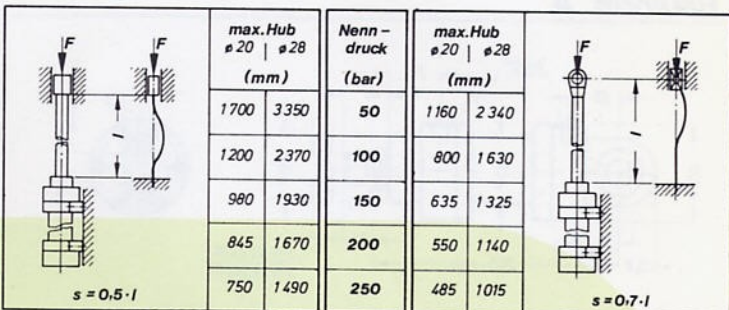
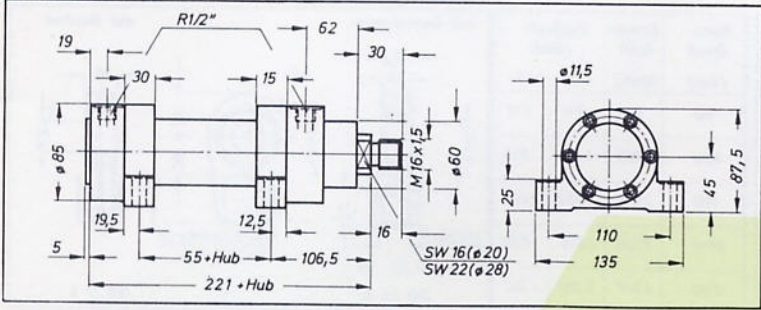
Bauform E



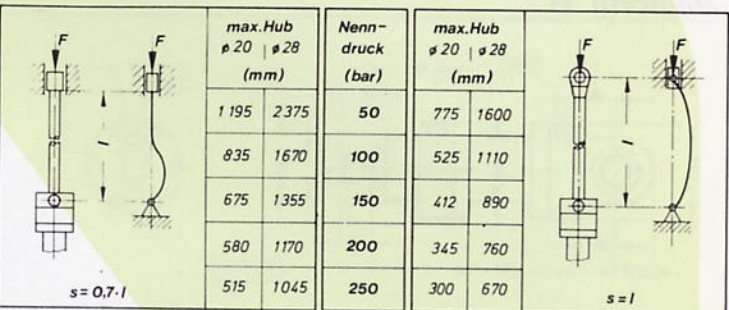
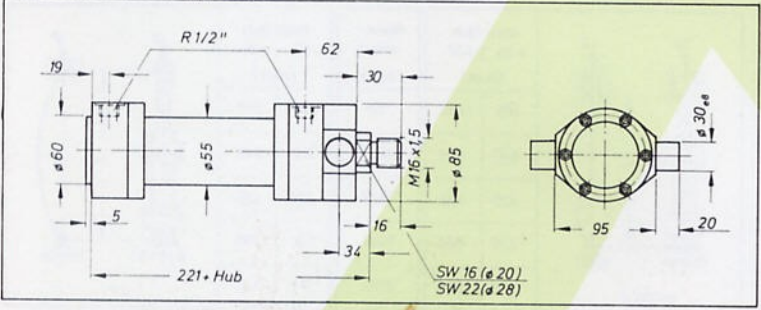
max. Hub ø 20 ø 28 (mm)	Nenn- druck (bar)	max. Hub ø 20 ø 28 (mm)
720	50	450
480	100	280
375	150	210
310	200	165
265	250	135



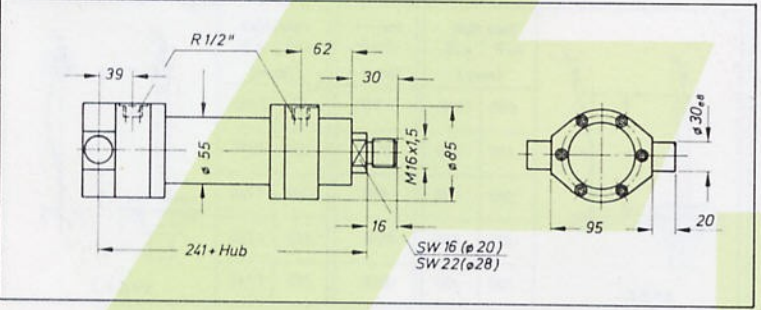
Bauform F



Bauform Ek

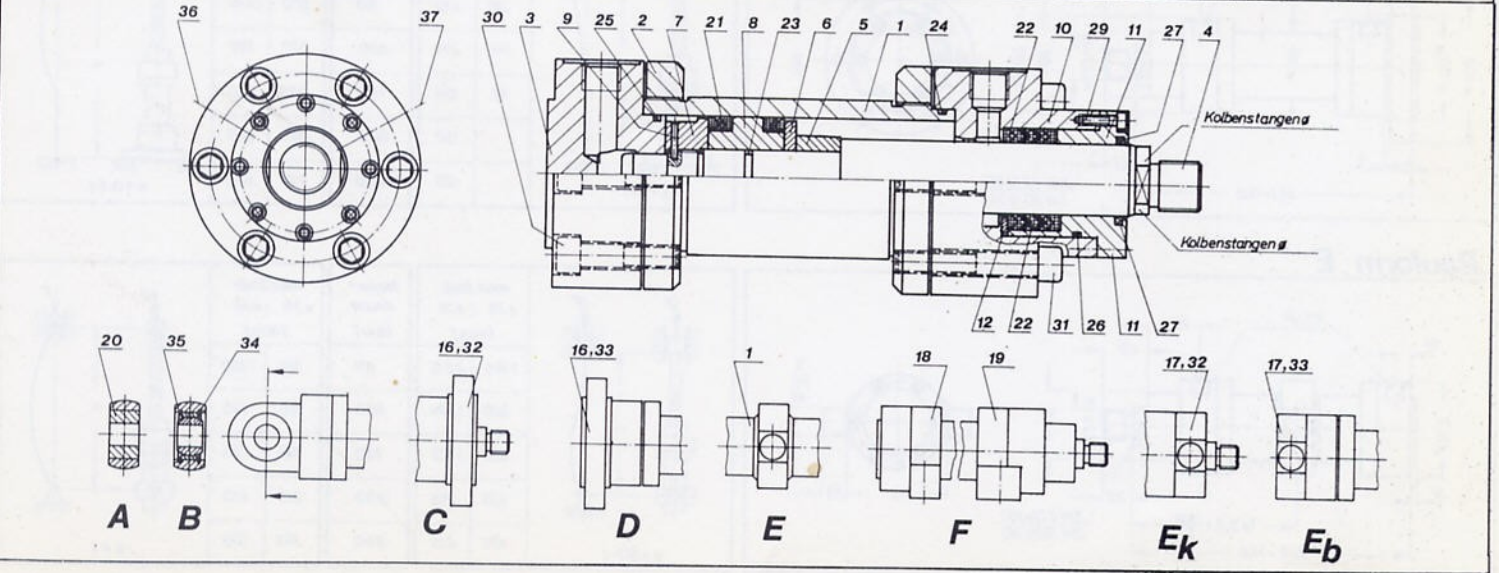


Bauform Eb

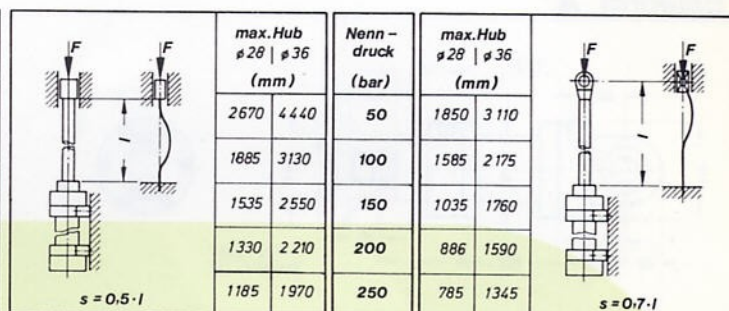
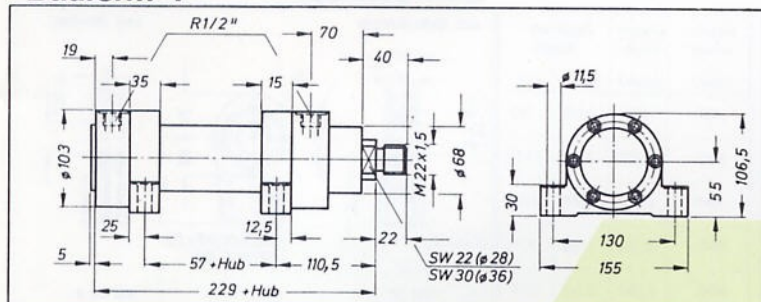


Masse der Zylinder Schnittbild

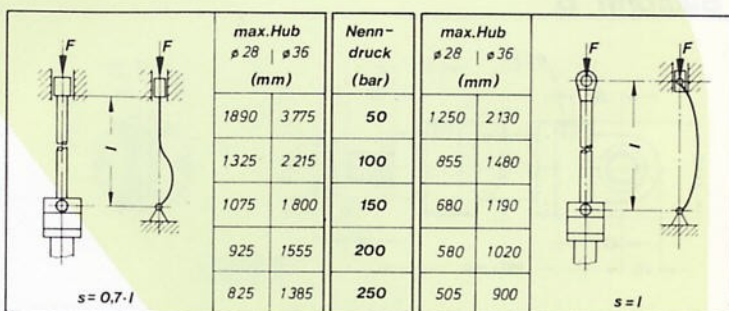
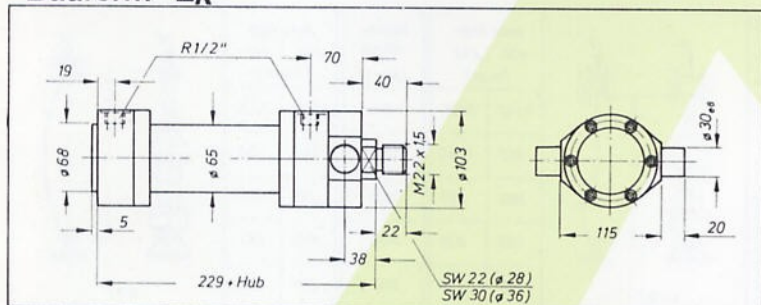
Bauform	A • B	C • D	E	F	Ek • Eb
Masse in kg	ø 20 ø 28	6,8 • 0,011 • Hub 6,8 • 0,013 • Hub	9,5 • 0,011 • Hub 9,5 • 0,013 • Hub	7,5 • 0,011 • Hub 7,5 • 0,013 • Hub	7,5 • 0,011 • Hub 7,5 • 0,013 • Hub



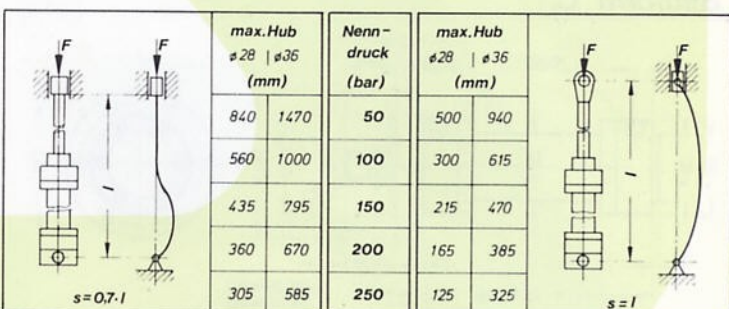
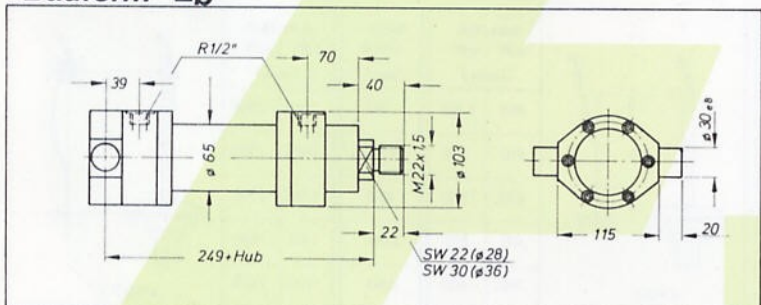
Bauform F



Bauform E_k

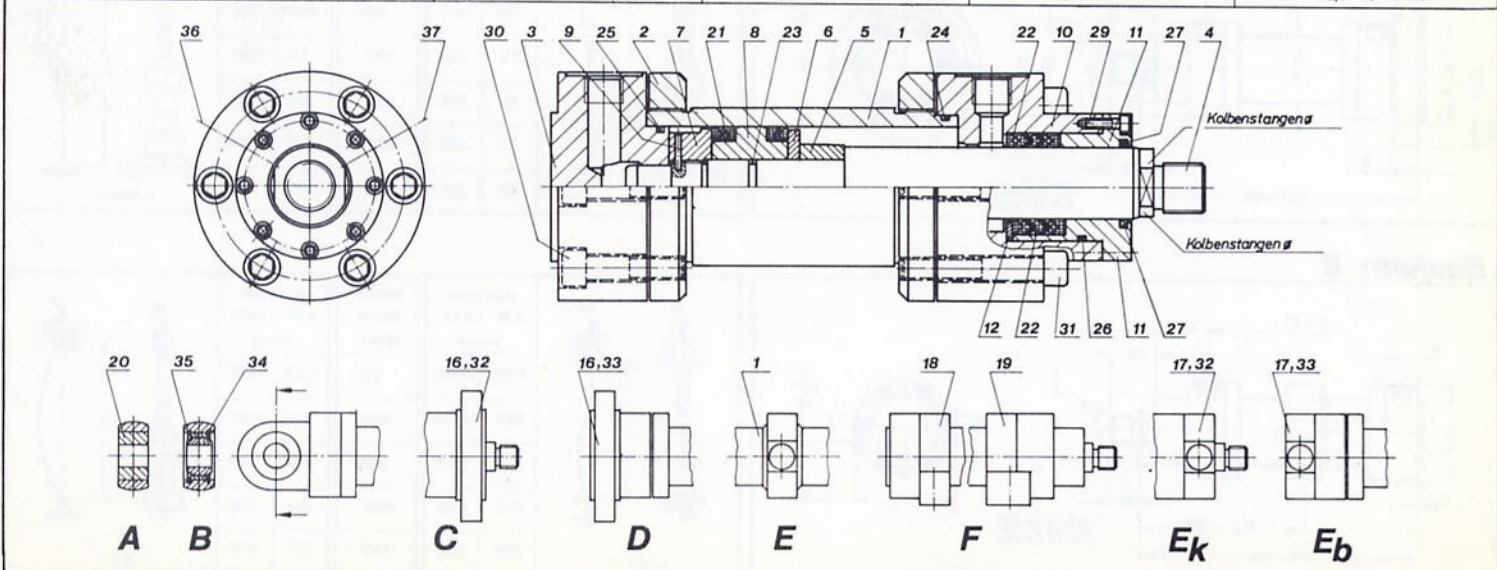


Bauform Eb



Masse der Zylinder Schnittbild

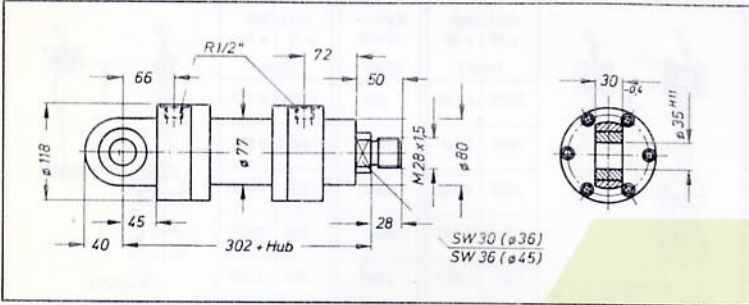
Bauform		A + B	C + D	E	F	$E_k + E_b$
Masse	Ø 28	11 + 0,016 · Hub	15 + 0,016 · Hub	12,5 + 0,016 · Hub	12,5 + 0,016 · Hub	12,5 + 0,016 · Hub
in kg	Ø 36	11 + 0,019 · Hub	15 + 0,019 · Hub	12,5 + 0,019 · Hub	12,5 + 0,019 · Hub	12,5 + 0,019 · Hub



Hydraulikzylinder Type ZD 250 ... 63/ 36/ 45

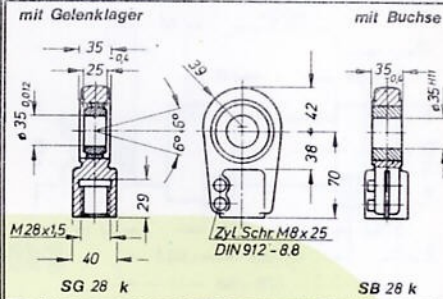
doppeltwirkend

Bauform A

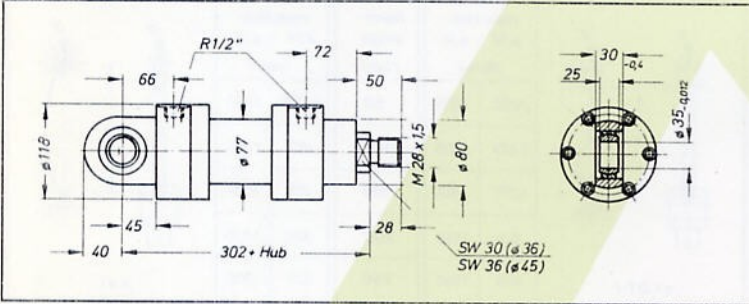


Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN)
50	1558	1049
100	3 117	2 099
150	4 675	3 148
200	6 234	4 198
250	7 792	5 247

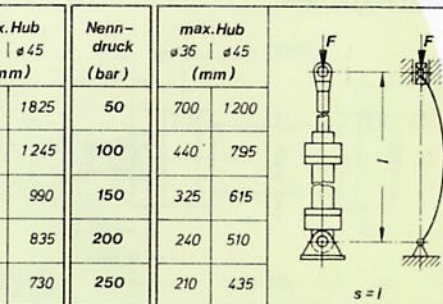
Stangenkopf



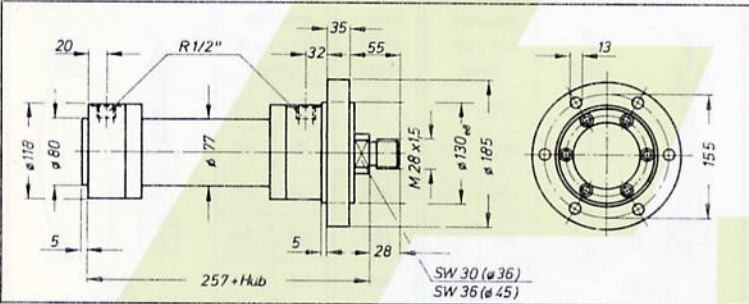
Bauform B



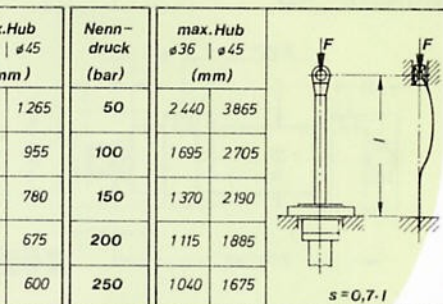
max. Hub ø 36 ø 45 (mm)	Nenn- druck (bar)	max. Hub ø 36 ø 45 (mm)
1110	50	700
740	100	440
580	150	325
455	200	240
415	250	210



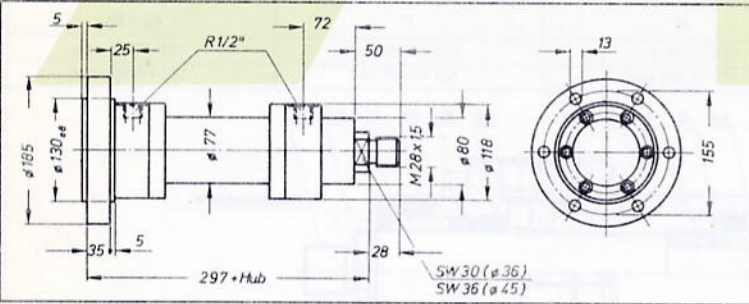
Bauform C



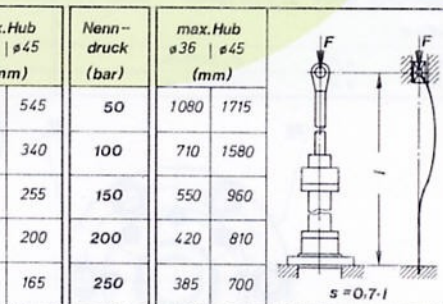
max. Hub ø 36 ø 45 (mm)	Nenn- druck (bar)	max. Hub ø 36 ø 45 (mm)
865	50	2 440
610	100	1 695
490	150	1 370
405	200	1 115
380	250	1 040



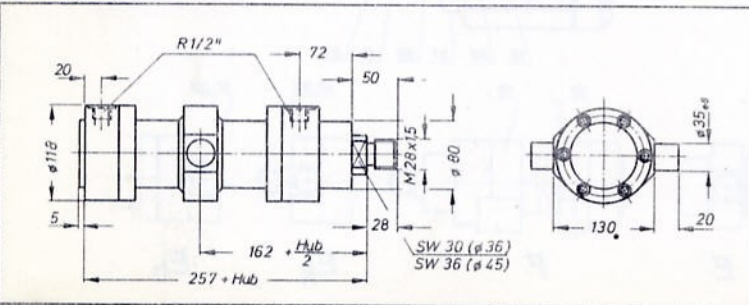
Bauform D



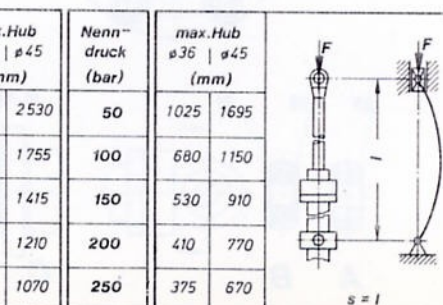
max. Hub ø 36 ø 45 (mm)	Nenn- druck (bar)	max. Hub ø 36 ø 45 (mm)
300	50	1 080
170	100	710
110	150	550
70	200	420
60	250	385



Bauform E



max. Hub ø 36 ø 45 (mm)	Nenn- druck (bar)	max. Hub ø 36 ø 45 (mm)
1580	50	1 025
1085	100	680
865	150	530
700	200	410
650	250	375



	max. Hub ø 36 ø 45 (mm)		Nenn- druck (bar)	max. Hub ø 36 ø 45 (mm)		
	3 515	5 510		2 440	3 865	
	2 480	3 890		1 895	2 705	
	2 020	3 170		1 370	2 190	
	1 665	2 740		1 115	1 885	
	1 560	2 450		1 040	1 675	

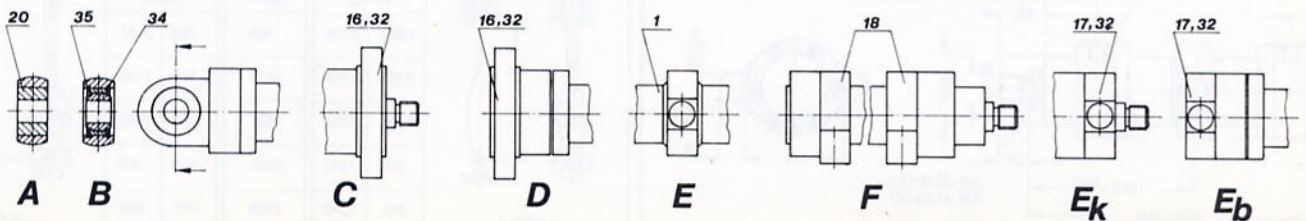
max. Hub ø 36 ø 45 (mm)	
2485	3910
1745	2750
1420	2240
1165	1935
1090	1725

Nenn- druck (bar)
50
100
150
200
250

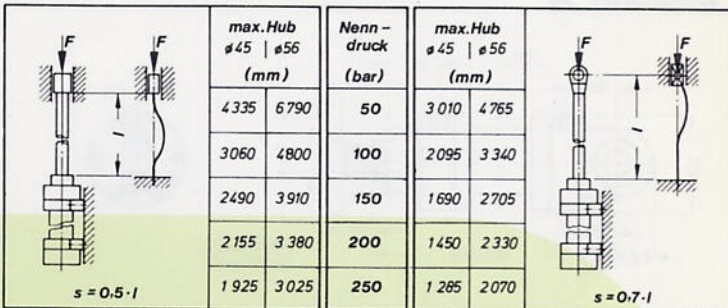
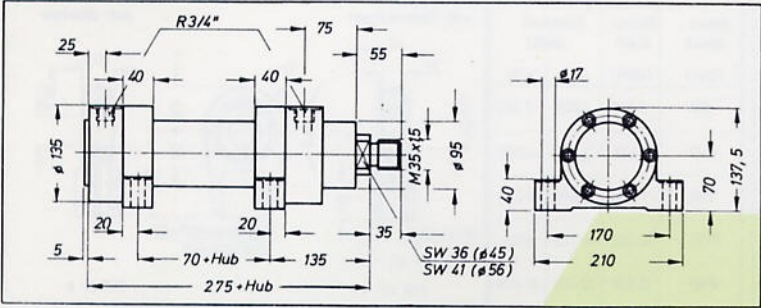
max. Hub ø 36 ø 45 (mm)	
1660	2655
1140	1845
910	1485
735	1270
680	1125

$s = 0.7 \cdot l$	max. Hub ø36 ø45 (mm)		Nenn- druck (bar)	max. Hub ø36 ø45 (mm)		$s = l$
	1125	1840		710	1210	
	755	1260		450	805	
	590	1000		340	625	
	465	850		250	520	
	430	750		225	445	

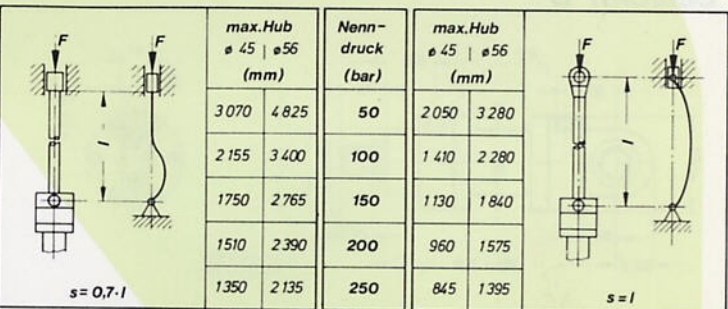
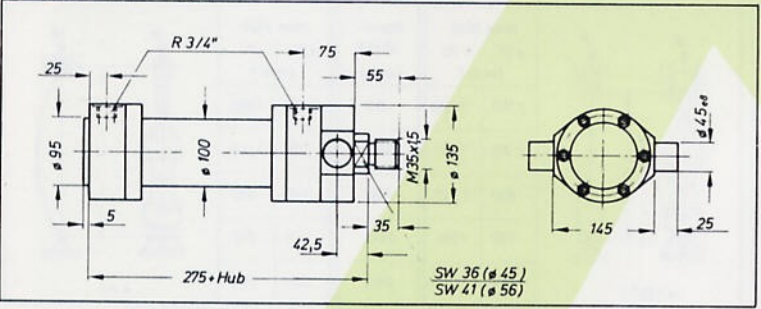
Bauform	A + B	C + D	E	F	$E_k + E_b$
Masse in kg	36	23	19	19	19
	18 · 0,020 · Hub	23 · 0,020 · Hub	19 · 0,020 · Hub	19 · 0,020 · Hub	19 · 0,020 · Hub
	45	23	19	19	19
	18 · 0,024 · Hub	23 · 0,024 · Hub	19 · 0,024 · Hub	19 · 0,024 · Hub	19 · 0,024 · Hub



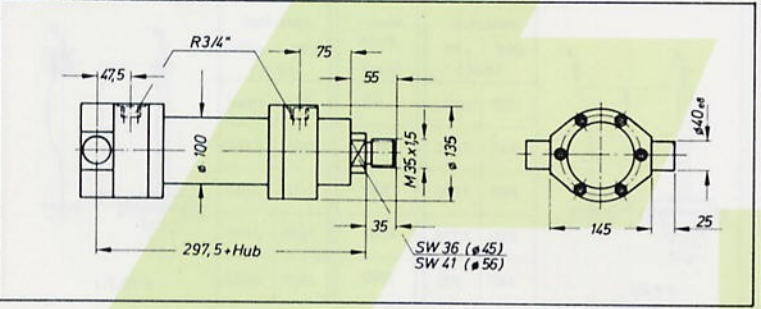
Bauform F



Bauform Ek

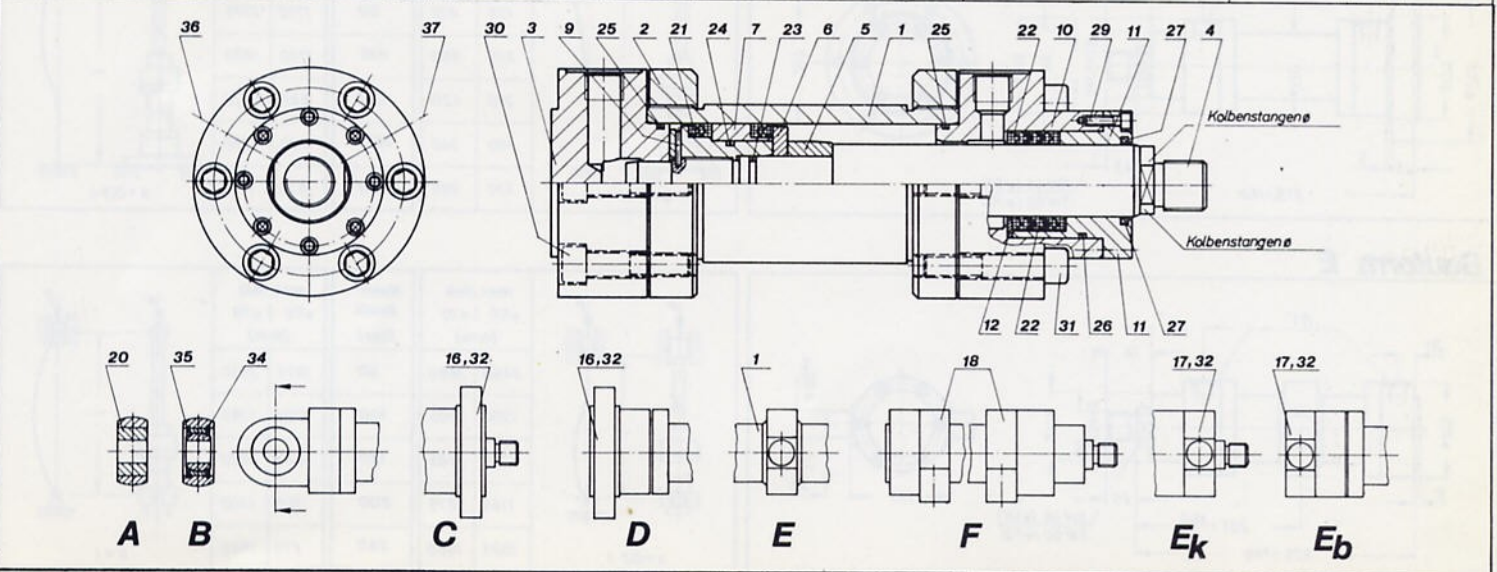


Bauform Eb

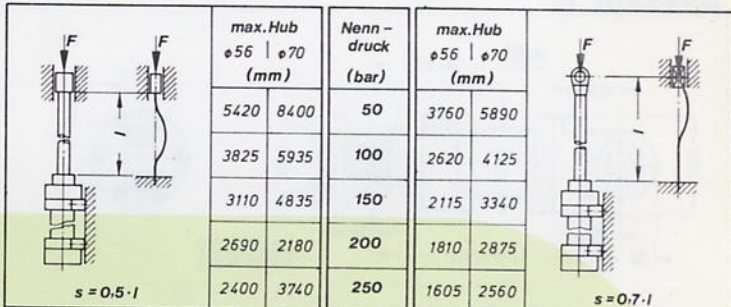
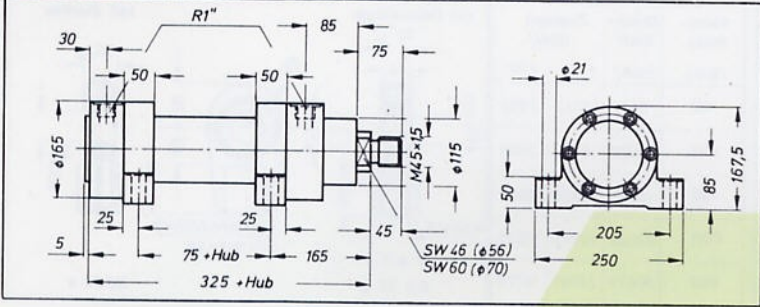


Masse der Zylinder Schnittbild

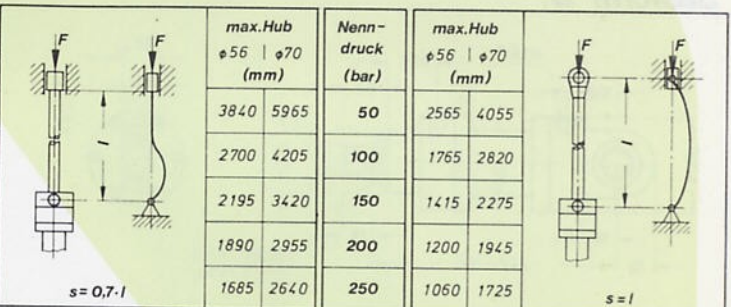
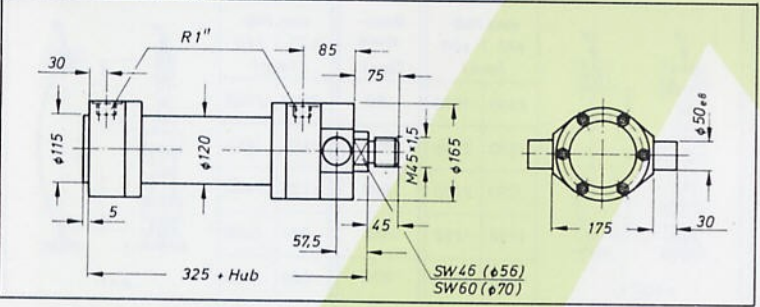
Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg	25 + 0,035 · Hub 25 + 0,041 · Hub	28 + 0,035 · Hub 28 + 0,041 · Hub	27 + 0,035 · Hub 27 + 0,041 · Hub	29 + 0,035 · Hub 29 + 0,041 · Hub	27 + 0,035 · Hub 27 + 0,041 · Hub



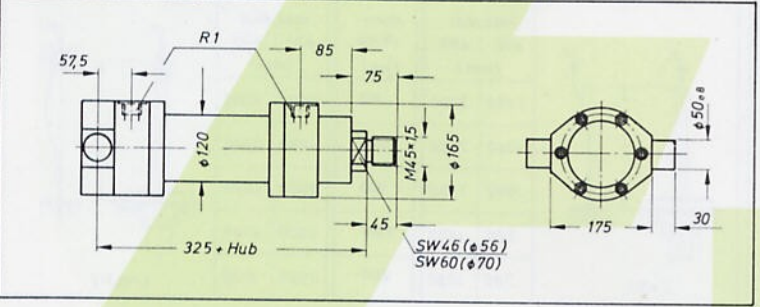
Bauform F



Bauform Ek

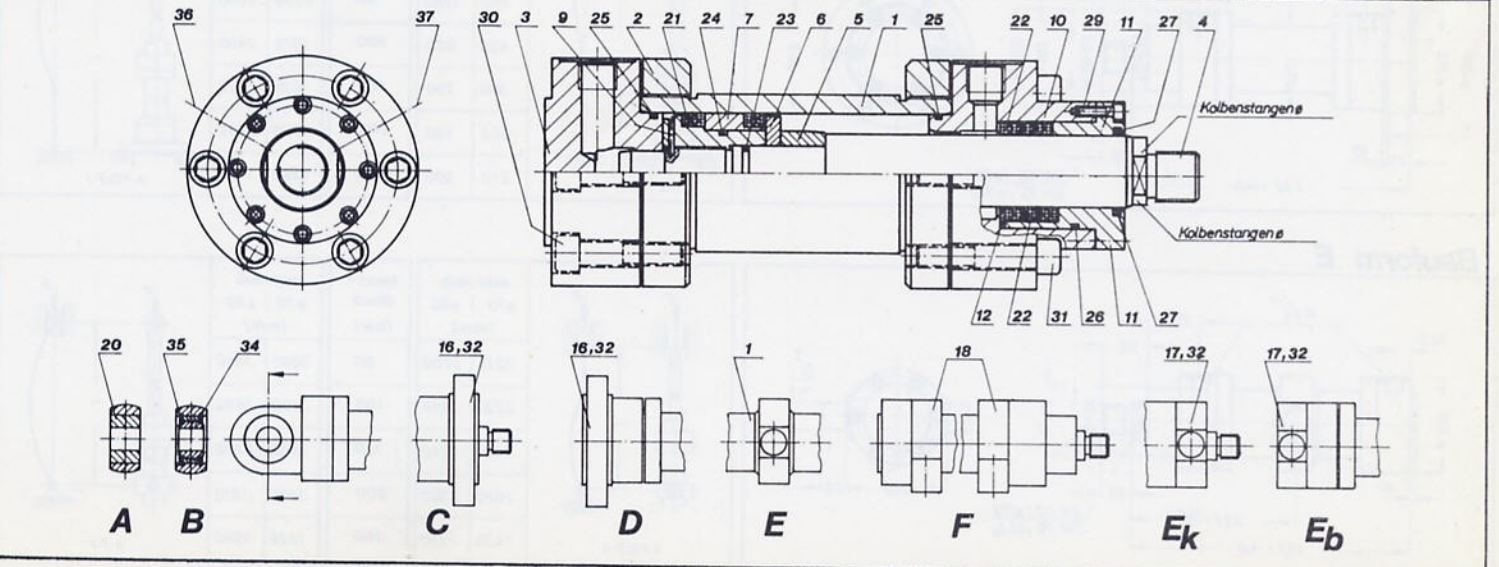


Bauform Eb

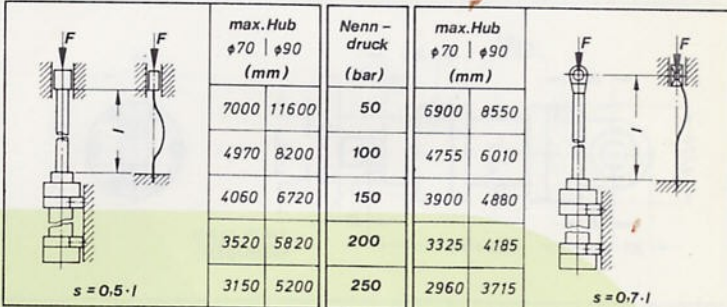
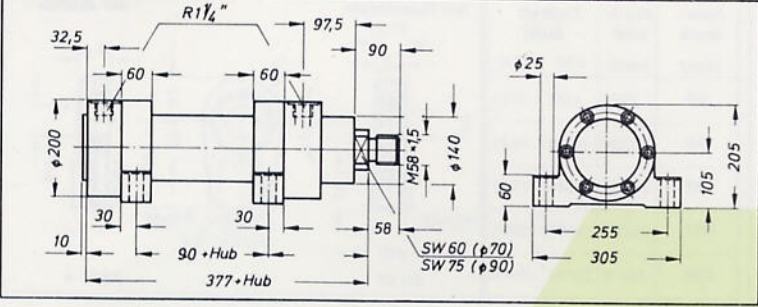


Masse der Zylinder Schnittbild

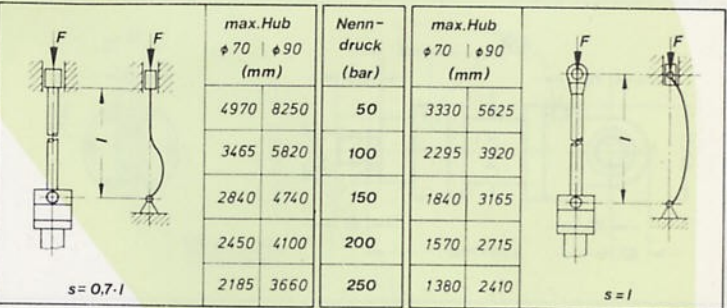
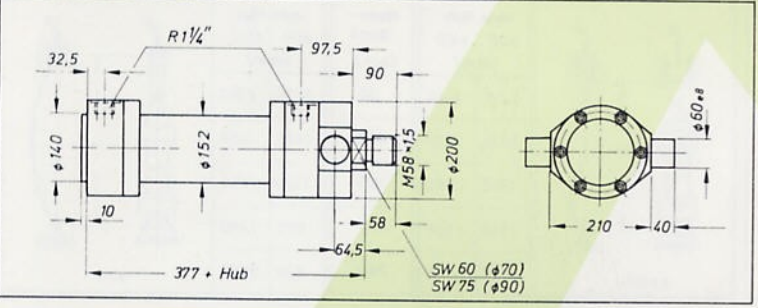
Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg	44 + 0,046 · Hub	57 + 0,046 · Hub	46 + 0,046 · Hub	48 + 0,046 · Hub	46 + 0,046 · Hub
	44 + 0,058 · Hub	57 + 0,058 · Hub	46 + 0,058 · Hub	48 + 0,058 · Hub	46 + 0,058 · Hub



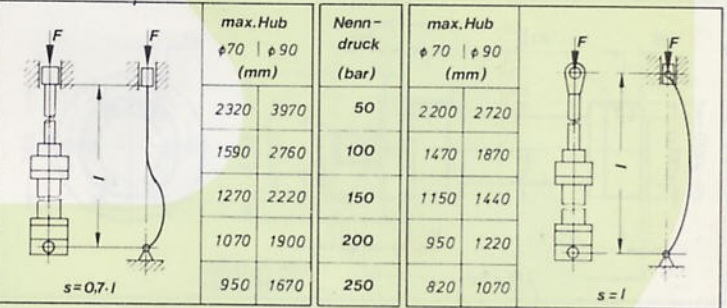
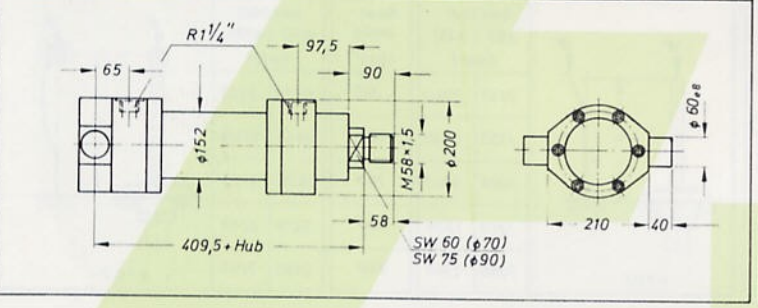
Bauform F



Bauform Ek

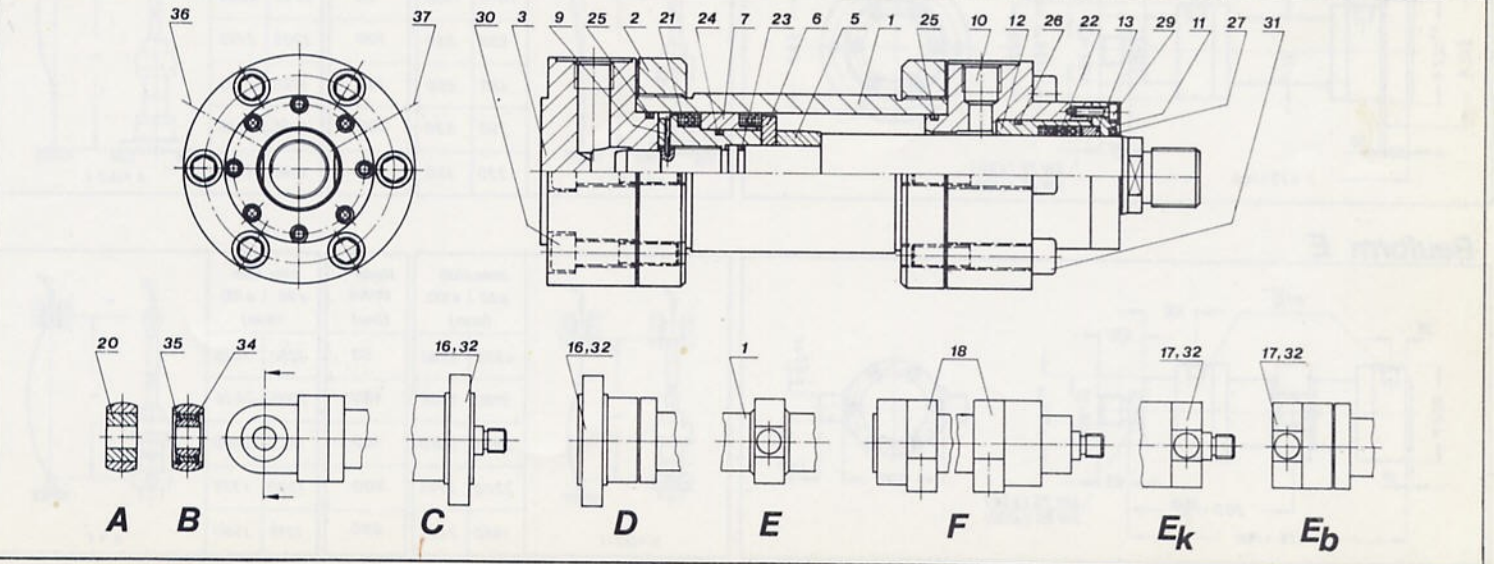


Bauform Eb



Masse der Zylinder Schnittbild

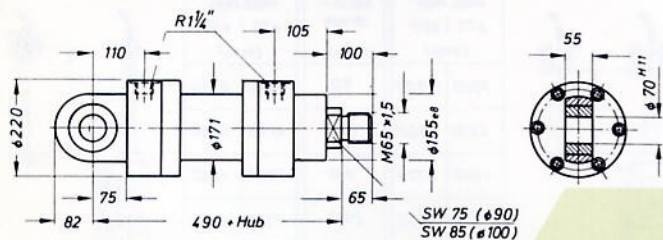
Bauform	A + B		C + D		E	F	Ek + Eb
Masse	φ 70	76 + 0,079 · Hub	96 + 0,079 · Hub	96 + 0,079 · Hub	83 + 0,079 · Hub	85 + 0,079 · Hub	83 + 0,079 · Hub
in kg	φ 90	78 + 0,098 · Hub	98 + 0,098 · Hub	98 + 0,098 · Hub	85 + 0,098 · Hub	87 + 0,098 · Hub	85 + 0,098 · Hub



90
100

doppeltwirkend

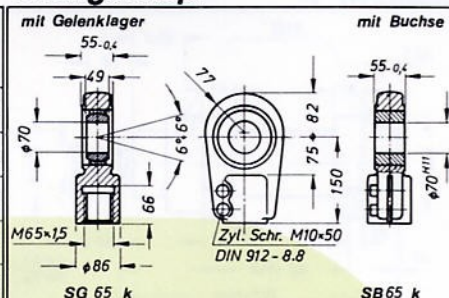
Bauform A



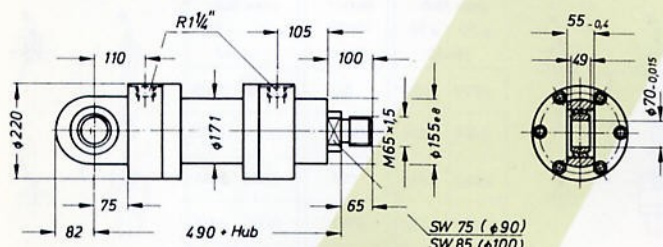
SW 75 (ø 90)
SW 85 (ø 100)

Stangenkopf

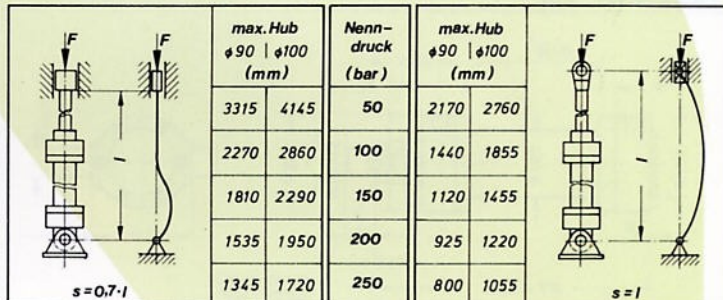
Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN)	
		490	4100
50	7695	4515	3765
100	15390	9030	7535
150	23085	13540	11305
200	30780	18060	15070
250	38475	22565	18840



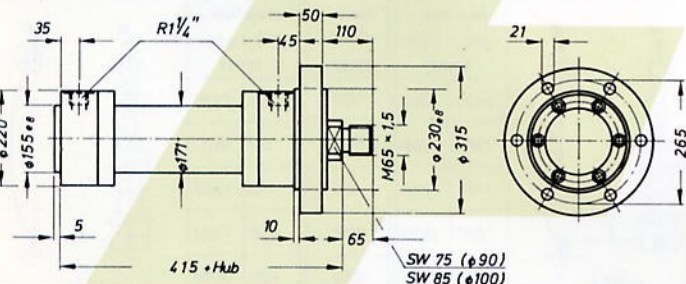
Bauform B



SW 75 (φ90)
SW 85 (φ100)



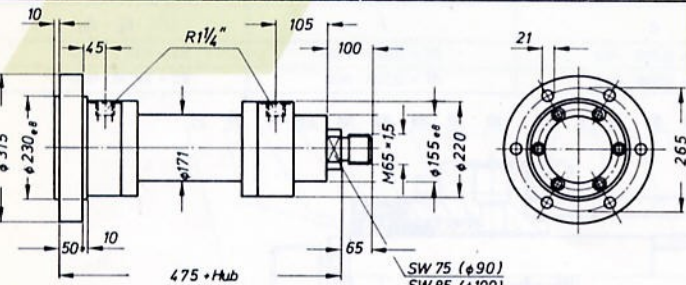
Bauform C



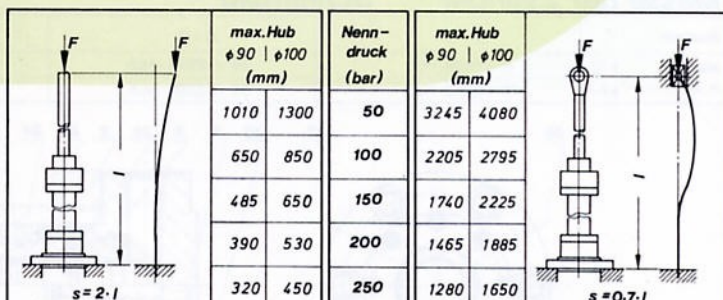
SW 75 (φ90)
SW 85 (φ100)



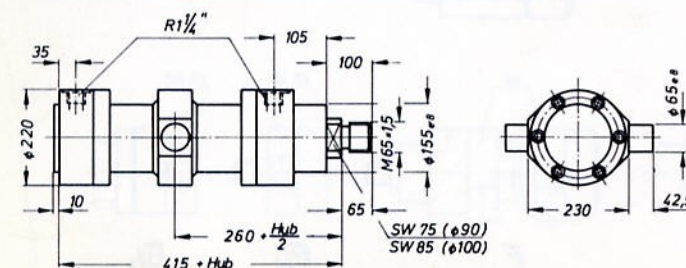
Bauform D



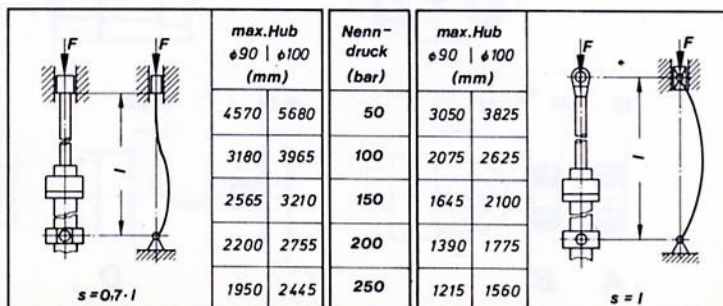
SW 75 ($\phi 90$)
SW 85 ($\phi 100$)



Bauform E



W 75 (φ90)
W 85 (φ100)



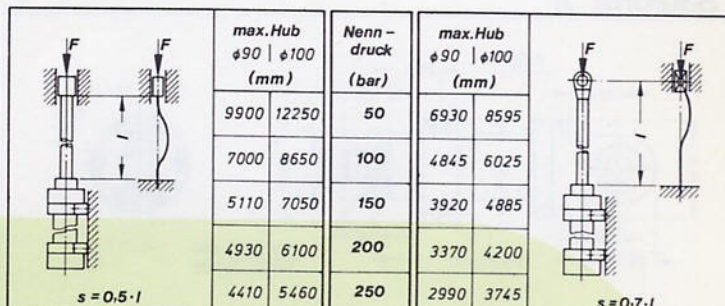
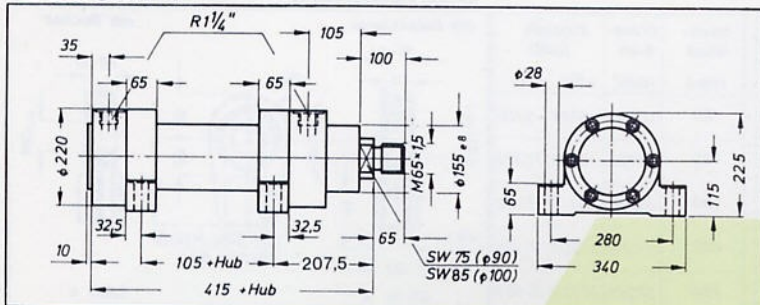


ABAG-Technik GmbH

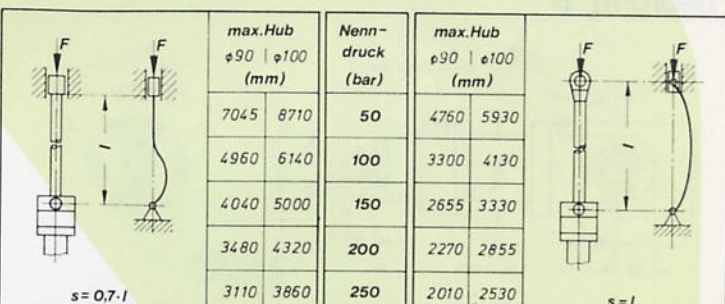
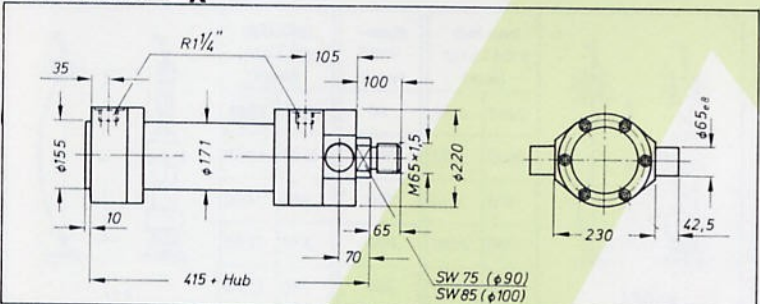
oelhydraulik und verfahrenstechnik

D-59001 Hamm · Postfach 1161 · phone: 023 87-8111 · fax: 023 87-8113

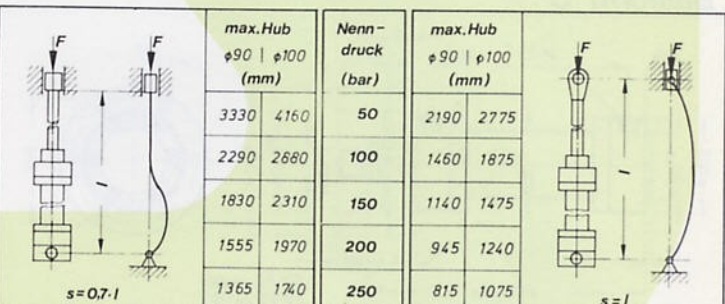
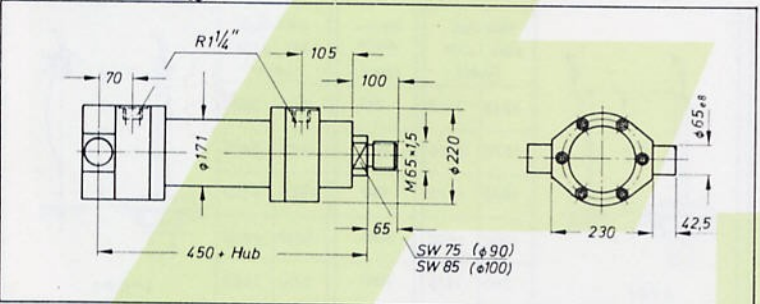
Bauform F



Bauform Ek



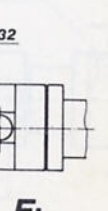
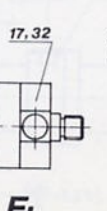
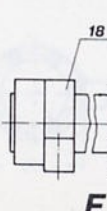
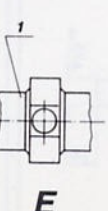
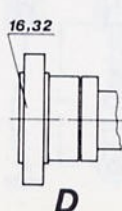
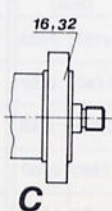
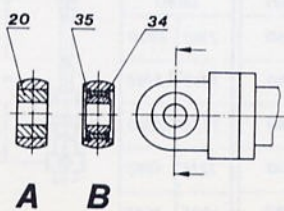
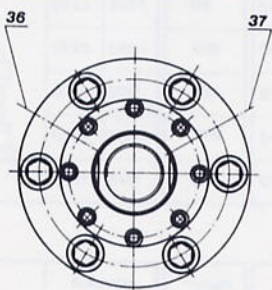
Bauform Eb



Masse der Zylinder

Schnittbild

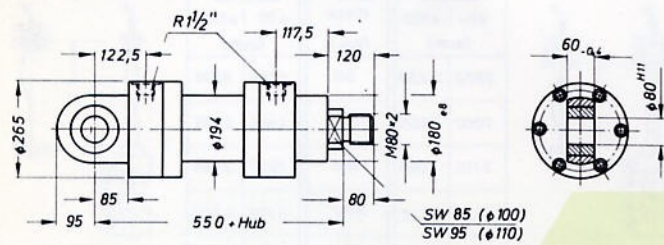
Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg	$\phi 90$ 100 + 0,109 · Hub $\phi 100$ 101 + 0,121 · Hub	120 + 0,109 · Hub 121 + 0,121 · Hub	110 + 0,109 · Hub 111 + 0,121 · Hub	112 + 0,109 · Hub 113 + 0,121 · Hub	110 + 0,109 · Hub 111 + 0,121 · Hub



Hydraulikzylinder Type ZD 250 ...160/100/110

doppeltwirkend

Bauform A



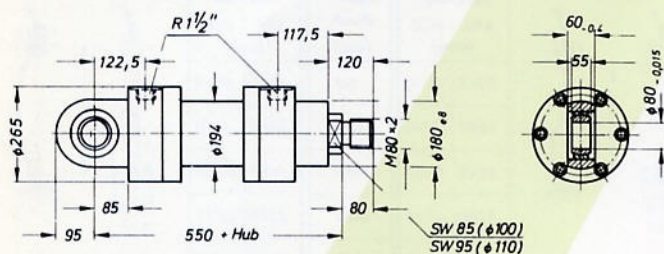
Stangenkopf

Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN)
50	10050	6125 5300
100	20105	12250 10600
150	30160	18375 15900
200	40210	24500 21205
250	50265	30630 26505

mit Gelenklager	mit Buchse

SG 80 k Zyl. Schr. M16x50 DIN 912 - 8.8 SB80 k

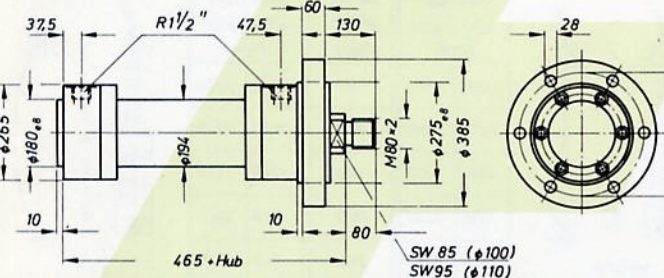
Bauform B



max. Hub φ100 φ110 (mm)	Nenn- druck (bar)	max. Hub φ100 φ110 (mm)
2990 4370	50	1925 2895
2030 3015	100	1255 1940
1610 2410	150	960 1520
1360 2050	200	870 1270
1185 1800	250	750 1090

s = 0,7 · l	s = l

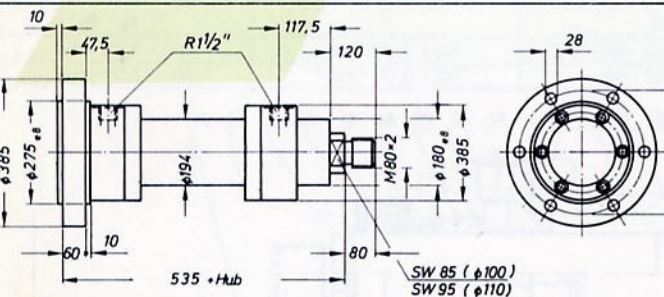
Bauform C



max. Hub φ100 φ110 (mm)	Nenn- druck (bar)	max. Hub φ100 φ110 (mm)
2245 3215	50	6315 9085
1575 2260	100	4405 6365
1280 1840	150	3560 5160
1100 1590	200	3055 4440
980 1415	250	2710 3950

s = 2 · l	s = 0,7 · l

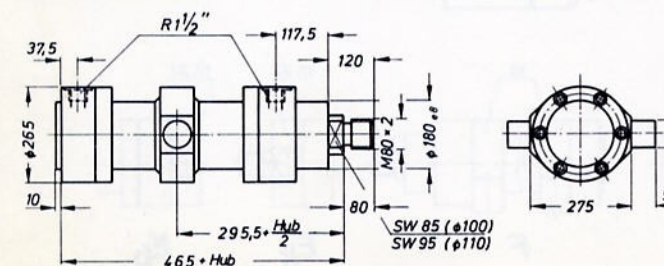
Bauform D



max. Hub φ100 φ110 (mm)	Nenn- druck (bar)	max. Hub φ100 φ110 (mm)
910 1400	50	2945 4330
575 920	100	1990 2970
425 710	150	1570 2370
340 590	200	1315 2010
280 500	250	1145 1765

s = 2 · l	s = 0,7 · l

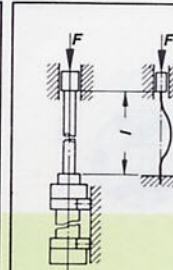
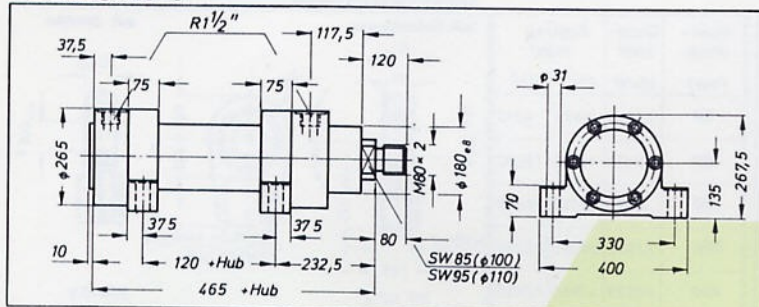
Bauform E



max. Hub φ100 φ110 (mm)	Nenn- druck (bar)	max. Hub φ100 φ110 (mm)
4155 6000	50	2740 4030
2880 4190	100	1845 2760
2320 3385	150	1450 2200
1980 2900	200	1215 1860
1750 2580	250	1055 1630

s = 0,7 · l	s = l

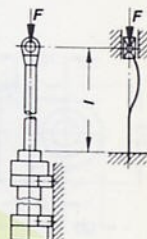
Bauform F



$$s = 0,5 \cdot l$$

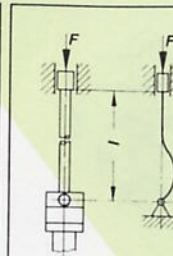
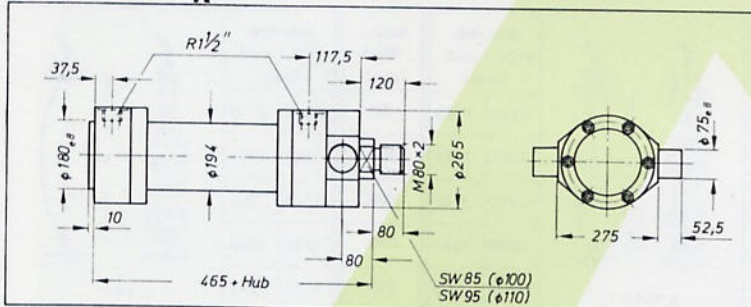
max. Hub φ100 φ110 (mm)	Nenn- druck (bar)
9100 12970	50
6410 9160	100
5230 7470	150
4525 6460	200
4040 5780	250

max. Hub φ100 φ110 (mm)	Nenn- druck (bar)
6315 9080	50
4405 6365	100
3560 5160	150
3055 4440	200
2700 3950	250



$$s = 0,7 \cdot l$$

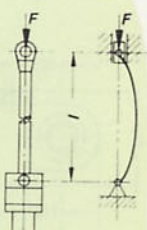
Bauform Ek



$$s = 0,7 \cdot l$$

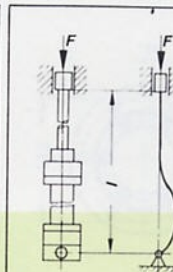
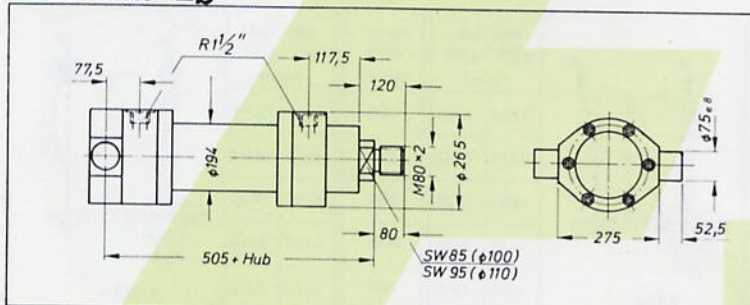
max. Hub φ100 φ110 (mm)	Nenn- druck (bar)
6445 9215	50
4335 6490	100
3690 5390	150
3180 4570	200
2840 4180	250

max. Hub φ100 φ110 (mm)	Nenn- druck (bar)
4320 6260	50
2980 4350	100
2390 3500	150
2030 3000	200
1790 2660	250



$$s = l$$

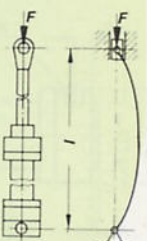
Bauform Eb



$$s = 0,7 \cdot l$$

max. Hub φ100 φ110 (mm)	Nenn- druck (bar)
3060 4440	50
2100 3080	100
1680 2480	150
1430 2120	200
1255 1875	250

max. Hub φ100 φ110 (mm)	Nenn- druck (bar)
1990 2960	50
1330 2010	100
1030 1590	150
855 1340	200
735 1170	250

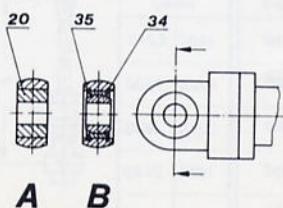
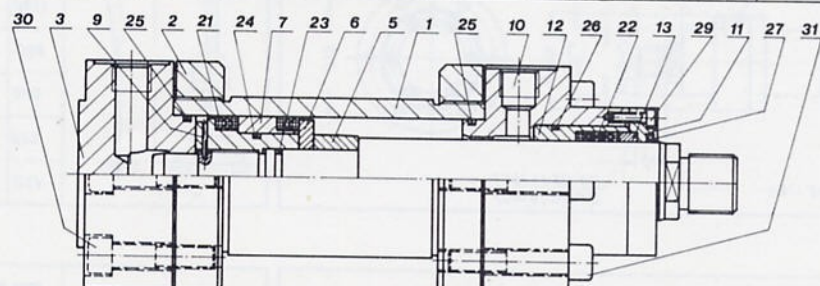
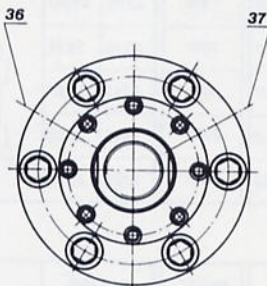


$$s = l$$

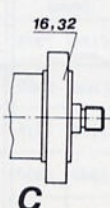
Masse der Zylinder

Schnittbild

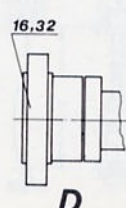
Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg	φ100 163 + 0,134 · Hub	205 + 0,134 · Hub	175 + 0,134 · Hub	184 + 0,134 · Hub	175 + 0,134 · Hub
	φ110 164 + 0,148 · Hub	206 + 0,148 · Hub	176 + 0,148 · Hub	185 + 0,148 · Hub	176 + 0,148 · Hub



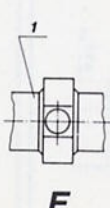
A B



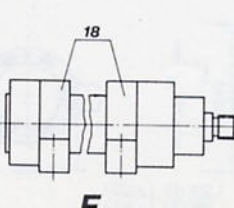
C



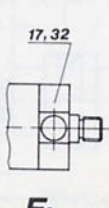
D



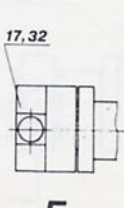
E



F

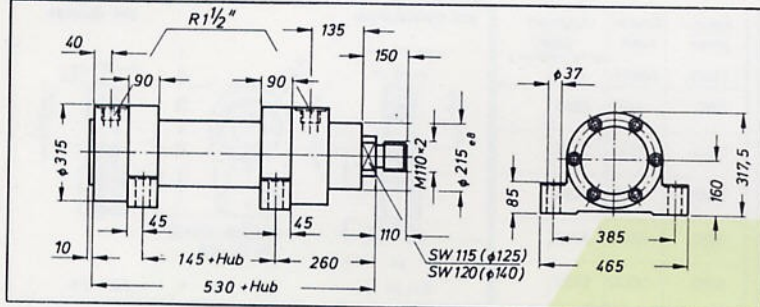


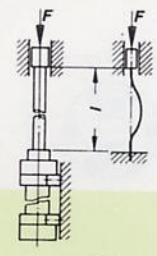
Ek



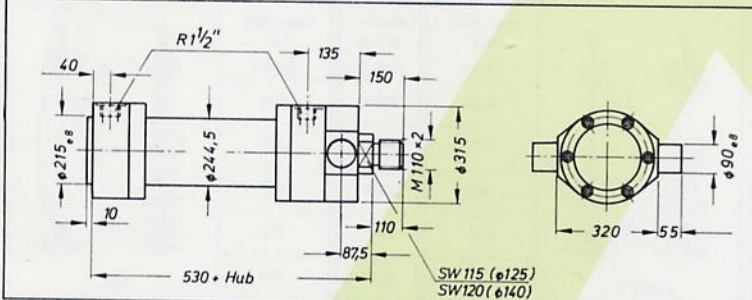
Eb

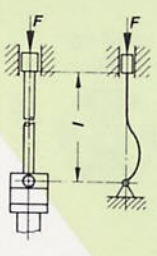
Bauform F



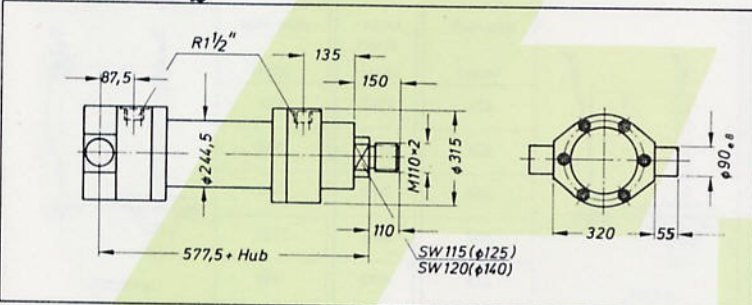
	max. Hub φ125 φ140 (mm)		Nenn- druck (bar)	max. Hub φ125 φ140 (mm)	
	φ125	φ140		φ125	φ140
$s = 0.5 \cdot l$	13500	16825	50	9355	11770
	9460	11900	100	6515	8245
	7720	9695	150	5265	6680
	6680	8400	200	4525	5760
	5970	7500	250	4020	5115

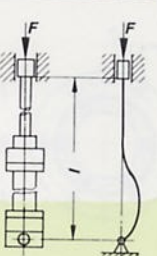
Bauform Ek



	max. Hub φ125 φ140 (mm)		Nenn- druck (bar)	max. Hub φ125 φ140 (mm)	
	φ125	φ140		φ125	φ140
$s = 0.7 \cdot l$	9515	11960	50	6400	8110
	6700	8430	100	4430	5640
	5455	6870	150	3560	4545
	4715	5945	200	3040	3900
	4200	5300	250	2685	3450

Bauform Eb

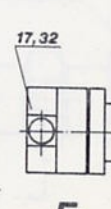
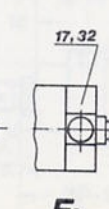
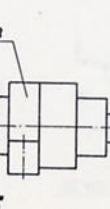
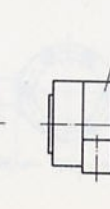
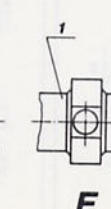
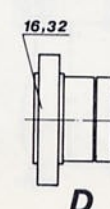
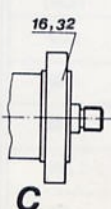
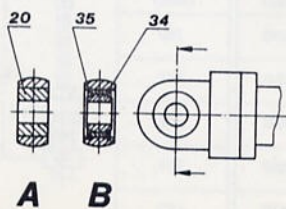
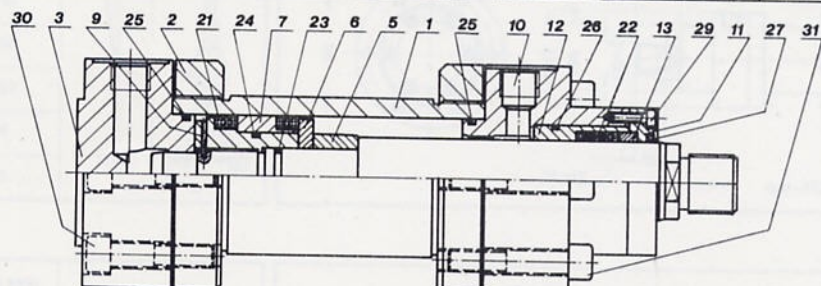
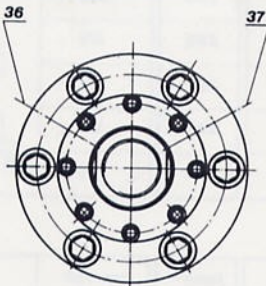


	max. Hub φ125 φ140 (mm)		Nenn- druck (bar)	max. Hub φ125 φ140 (mm)	
	φ125	φ140		φ125	φ140
$s = 0.7 \cdot l$	4515	5735	50	2955	3810
	3100	3970	100	1970	2575
	2480	3190	150	1535	2030
	2110	2730	200	1275	1700
	1860	2400	250	1095	1480

Masse der Zylinder

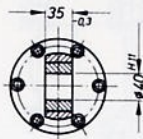
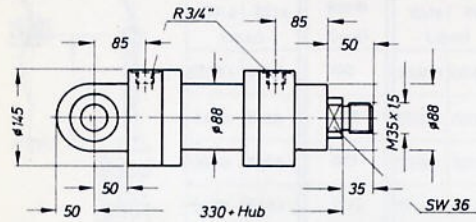
Schnittbild

Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg	276 + 0,220 · Hub 277 + 0,243 · Hub	335 + 0,220 · Hub 336 + 0,243 · Hub	302 + 0,220 · Hub 303 + 0,243 · Hub	302 + 0,220 · Hub 303 + 0,243 · Hub	302 + 0,220 · Hub 303 + 0,243 · Hub

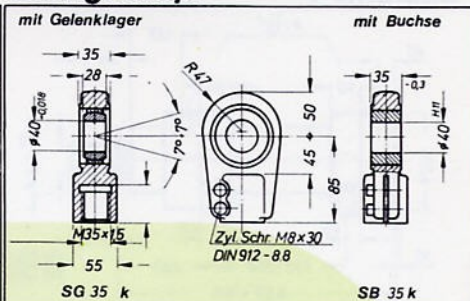


doppeltwirkend

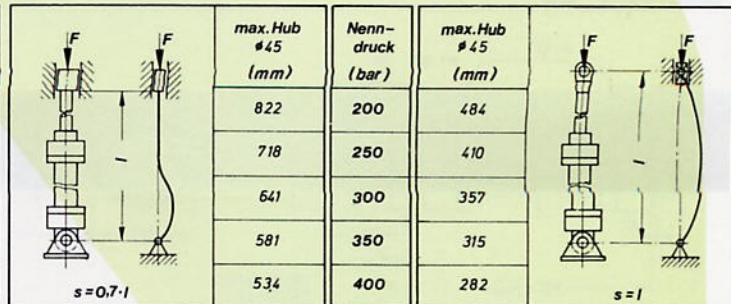
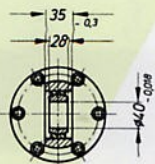
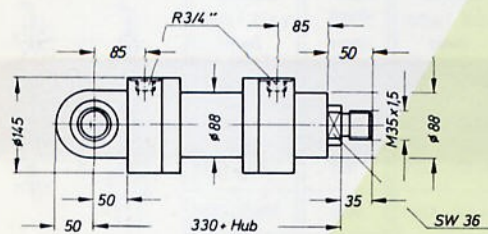
Stangenkopf



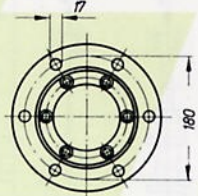
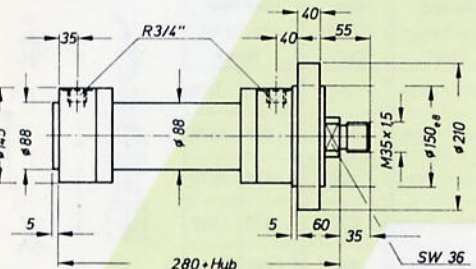
Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN) bei Kolbenstängen
200	6120	2996
250	7644	3745
300	9174	4494
350	10708	5243
400	12232	5992



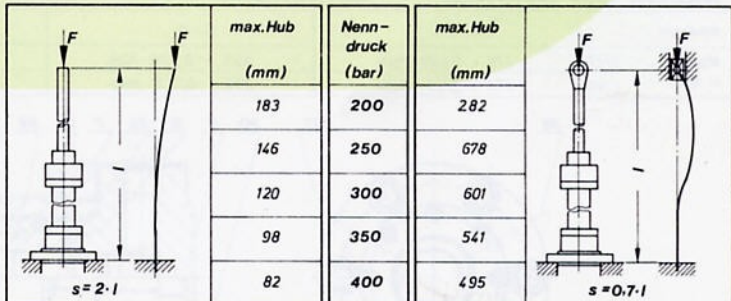
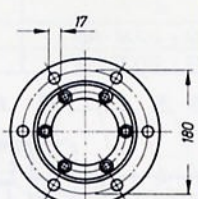
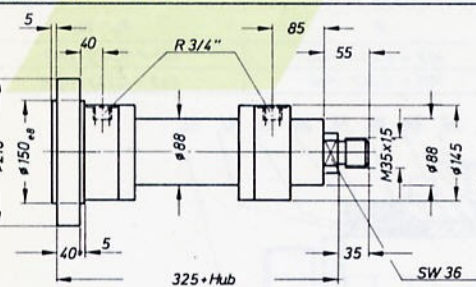
Bauform B



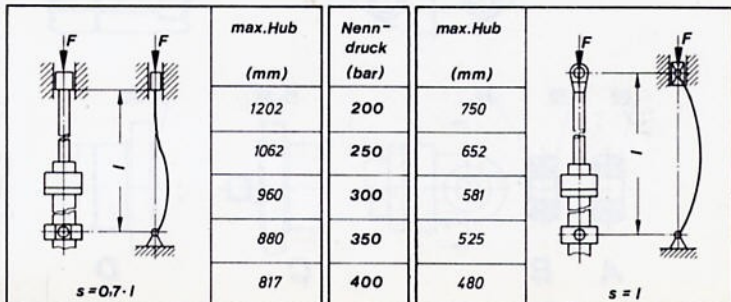
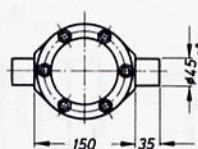
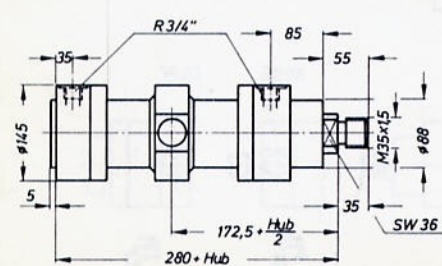
Bauform C



Bauform D



Bauform E



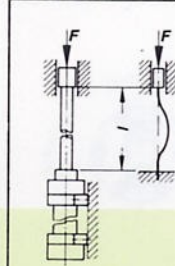
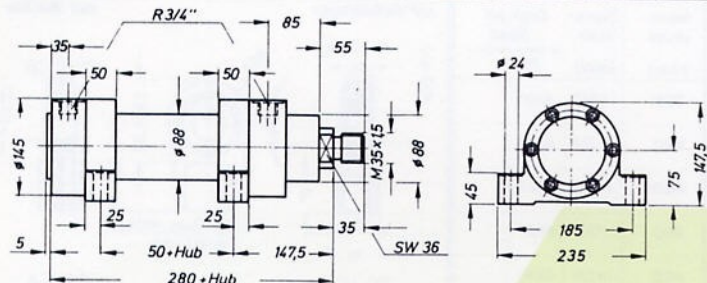


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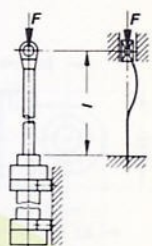
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Bauform F



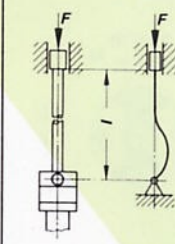
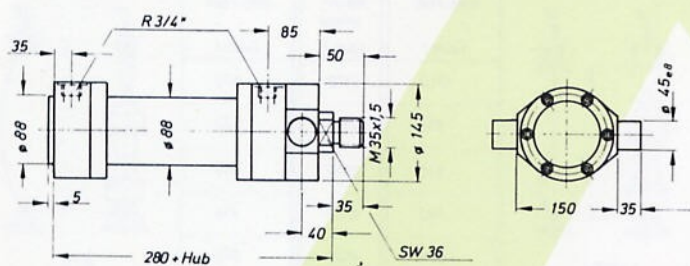
$$s = 0,5 \cdot l$$

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
2750	200	1875
2455	250	1665
2240	300	1512
2075	350	1392
1940	400	1298



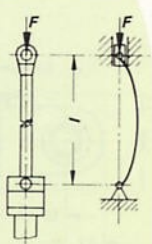
$$s = 0,7 \cdot l$$

Bauform Ek



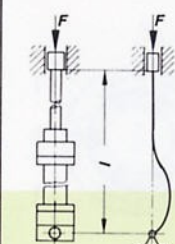
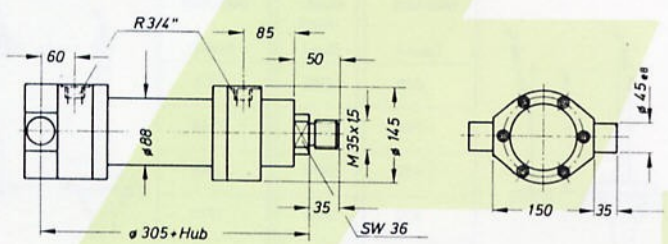
$$s = 0,7 \cdot l$$

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
1935	200	1260
1725	250	1110
1575	300	1005
1455	350	920
1360	400	855



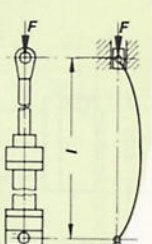
$$s = l$$

Bauform Eb



$$s = 0,7 \cdot l$$

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
835	200	500
735	250	425
655	300	370
595	350	330
550	400	300

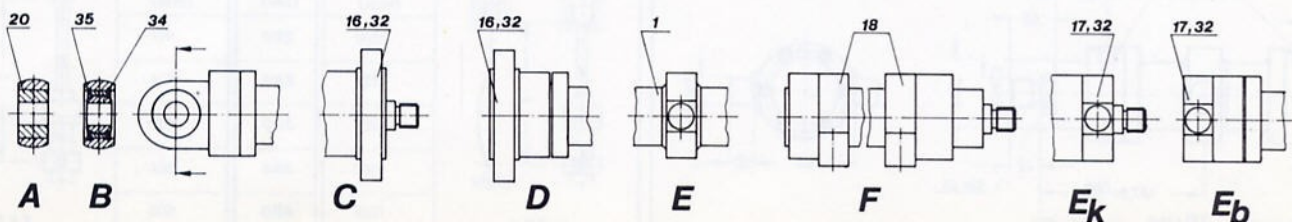
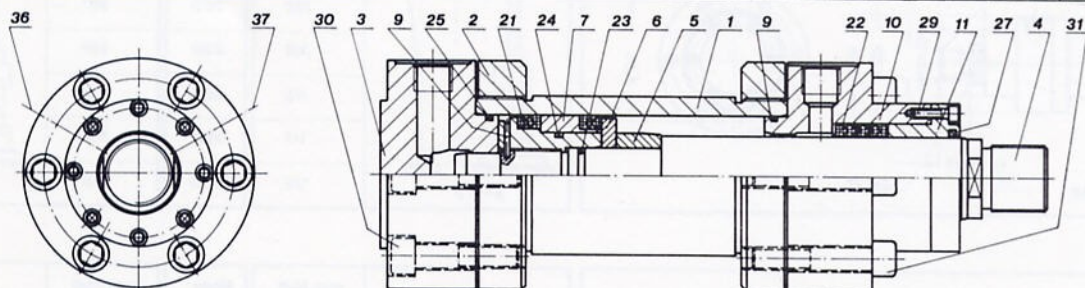


$$s = l$$

Masse der Zylinder

Schnittbild

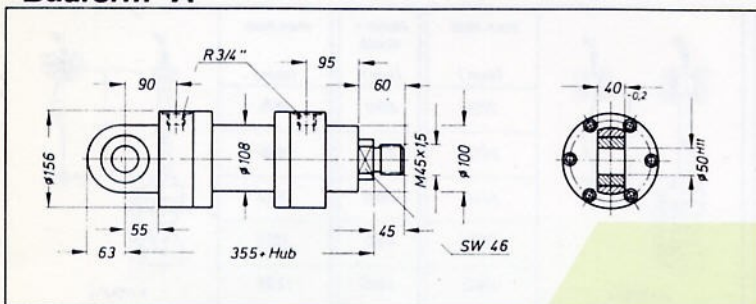
Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg (Hub in mm)	$32 + 0,029 \cdot \text{Hub}$	$46 + 0,029 \cdot \text{Hub}$	$34 + 0,029 \cdot \text{Hub}$	$37 + 0,029 \cdot \text{Hub}$	$34 + 0,029 \cdot \text{Hub}$



Hydraulikzylinder Type ZD 400... 80/56

doppeltwirkend

Bauform A

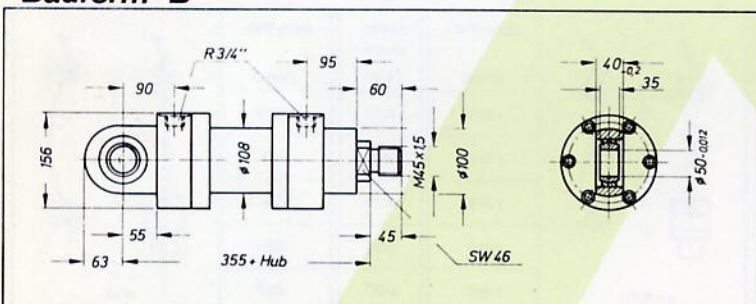


Stangenkopf

Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN) bei Kolbenstangen ϕ	mit Gelenklager	mit Buchse
200	9863	5031		
250	12328	6288		
300	14795	7546		
350	17261	8804		
400	19726	10061		

SG 45 k SB 45 k

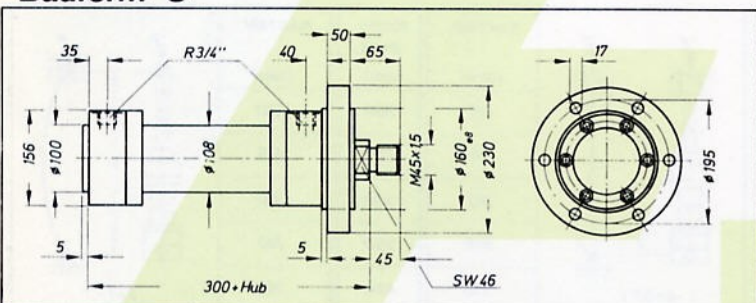
Bauform B



	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	1040	200	622
	912	250	532
	816	300	465
	742	350	415
	684	400	375

$s = 0.7 \cdot l$ $s = l$

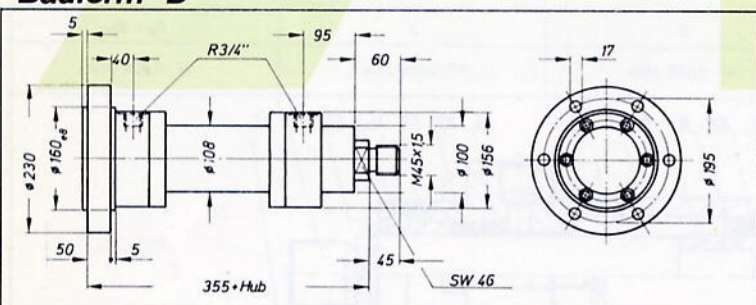
Bauform C



	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	840	200	2314
	750	250	2058
	680	300	1868
	630	350	1720
	590	400	1602

$s = 2 \cdot l$ $s = 0.7 \cdot l$

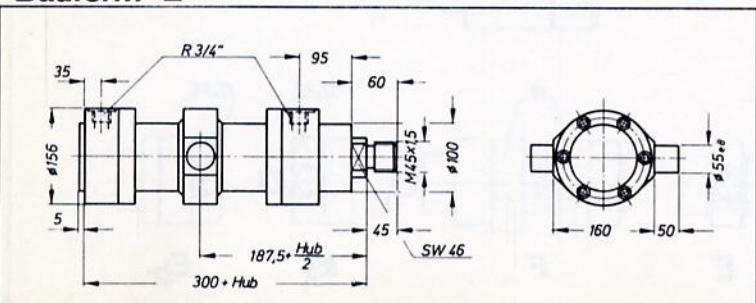
Bauform D



	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	250	200	987
	205	250	987
	170	300	765
	145	350	690
	125	400	631

$s = 2 \cdot l$ $s = 0.7 \cdot l$

Bauform E



	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	1500	200	941
	1330	250	821
	1200	300	732
	1100	350	664
	1025	400	608

$s = 0.7 \cdot l$ $s = l$

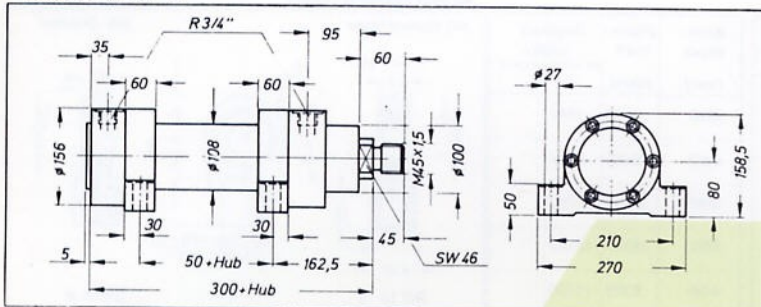


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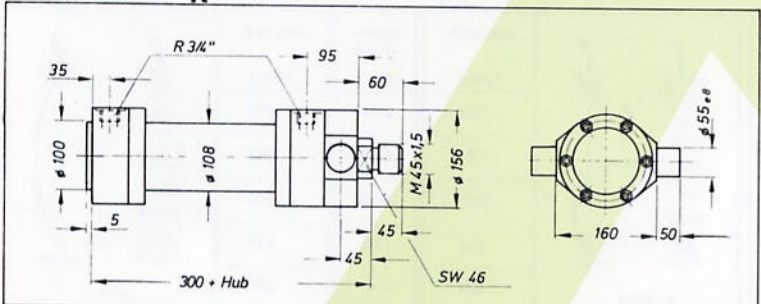
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Bauform F



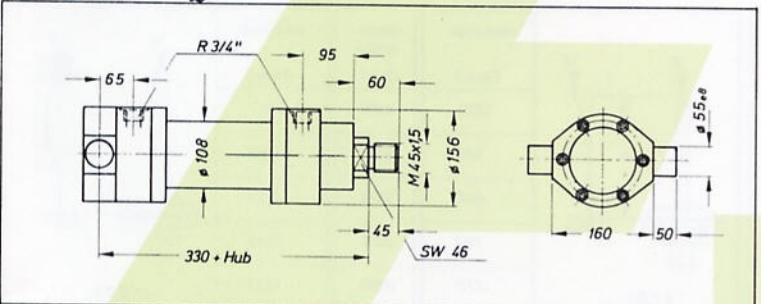
	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	3390	200	2314
	3030	250	2058
	2765	300	1868
	2560	350	1720
	2395	400	1602

Bauform Ek



	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	2380	200	1555
	2135	250	1375
	1945	300	1240
	1795	350	1140
	1680	400	1055

Bauform Eb

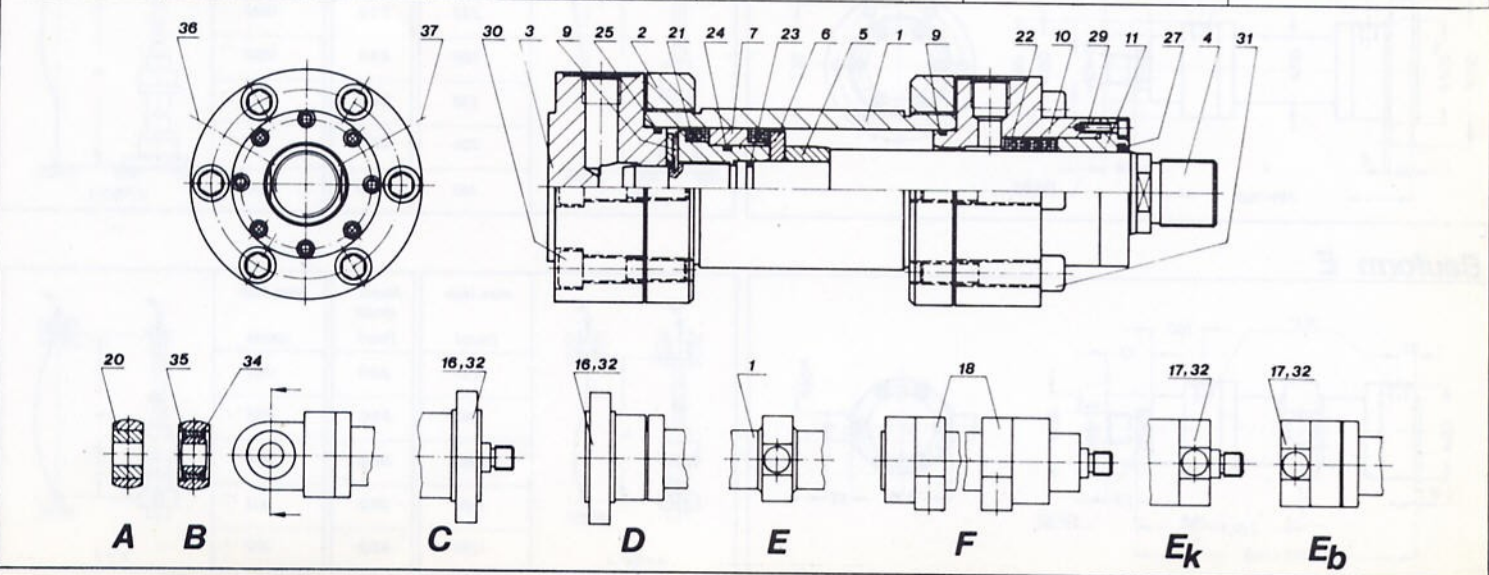


	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	1055	200	635
	925	250	545
	830	300	480
	755	350	430
	700	400	385

Masse der Zylinder

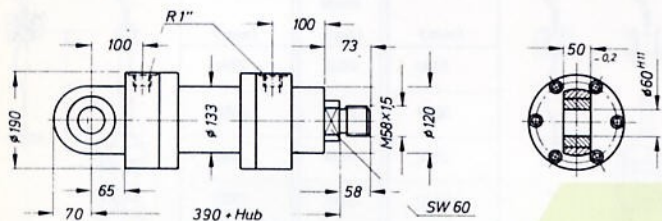
Schnittbild

Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg (Hub in mm)	41 + 0,055 · Hub	54 + 0,055 · Hub	43 + 0,055 · Hub	47 + 0,055 · Hub	43 + 0,055 · Hub



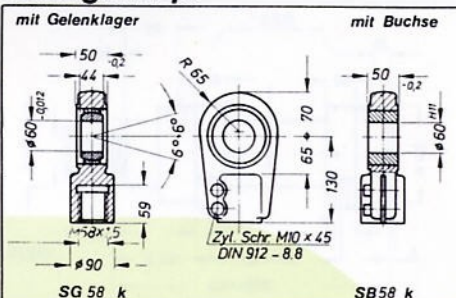
doppeltwirkend

Bauform A

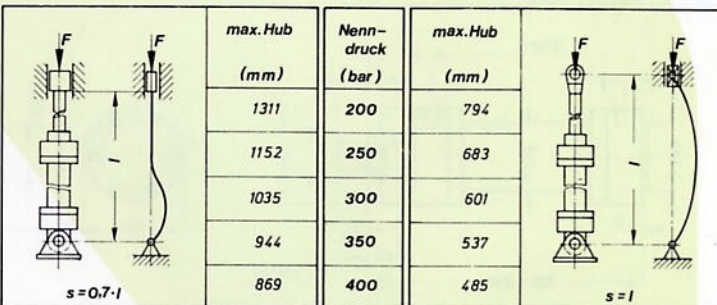
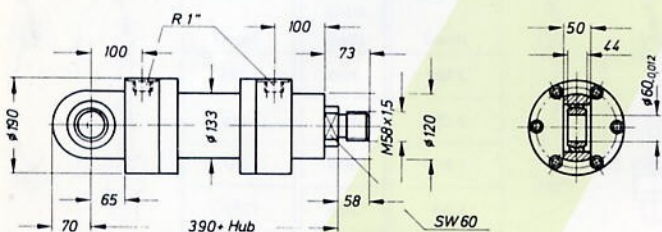


Stangenkopf

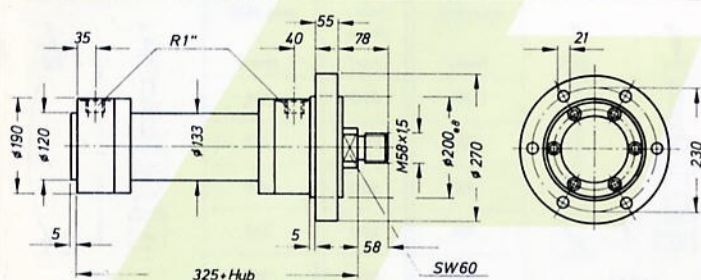
Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN) bei Kolbenstangen 70
200	15410	7860
250	19262	9825
300	23115	11790
350	26967	13755
400	30819	15720



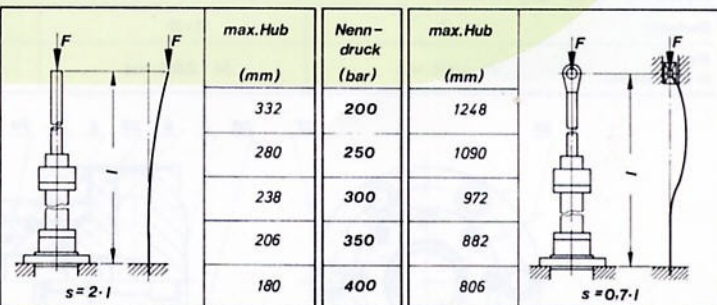
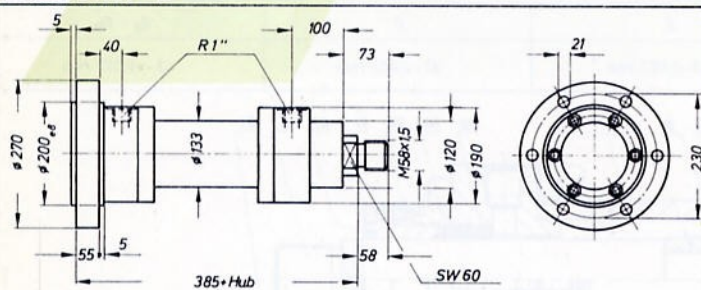
Bauform B



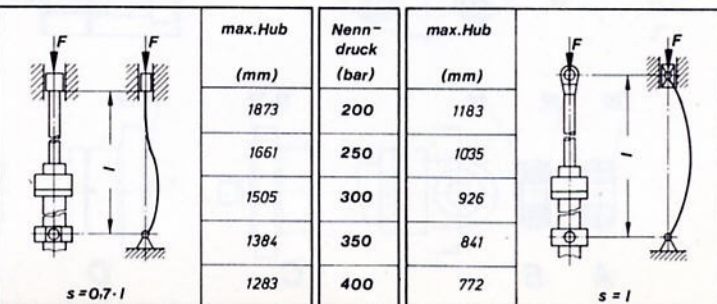
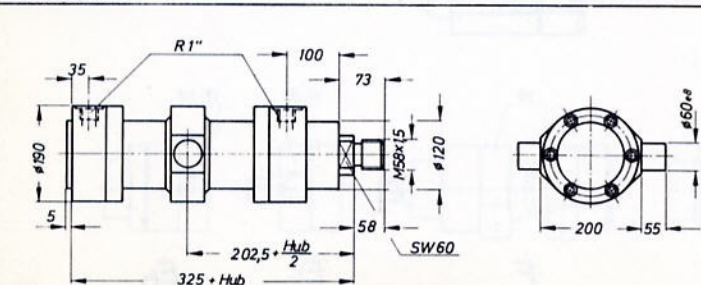
Bauform C



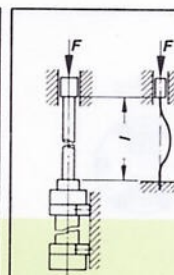
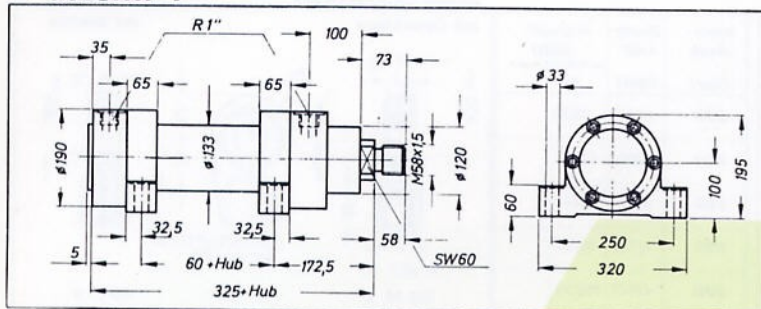
Bauform D



Bauform E



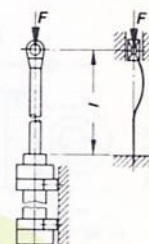
Bauform F



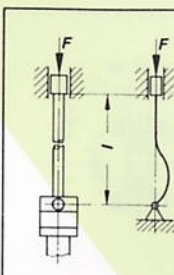
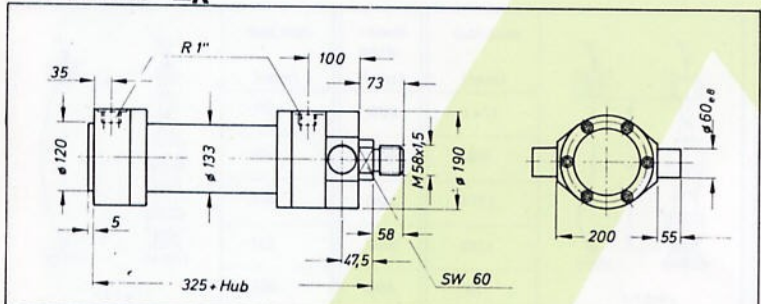
max. Hub (mm)
4200
3750
3425
3180
2960

Nenn- druck (bar)
200
250
300
350
400

max. Hub (mm)
2867
2549
2315
2133
1983



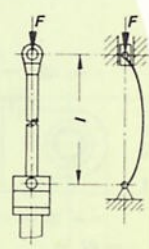
Bauform Ek



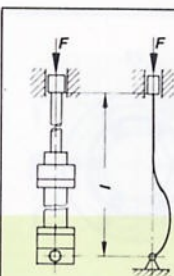
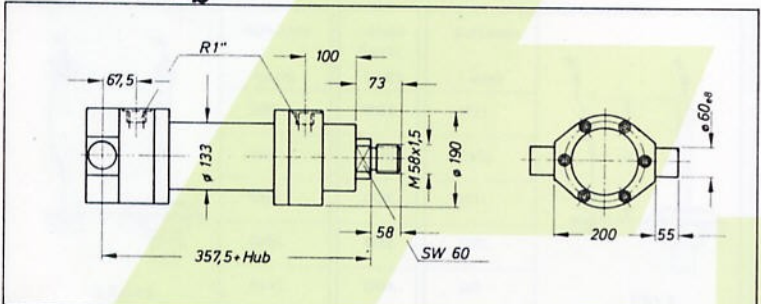
max. Hub (mm)
2 390
2 135
1 945
1 795
1 680

Nenn- druck (bar)
200
250
300
350
400

max. Hub (mm)
1 555
1 375
1 240
1 140
1 055



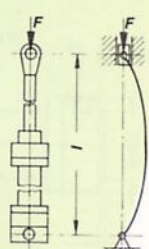
Bauform Eb



max. Hub (mm)
1 055
925
830
755
700

Nenn- druck (bar)
200
250
300
350
400

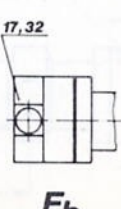
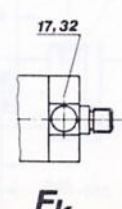
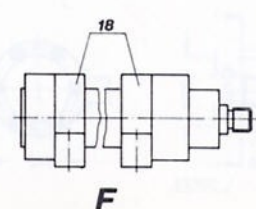
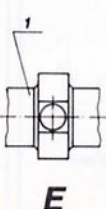
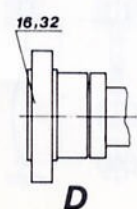
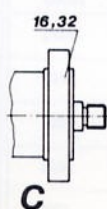
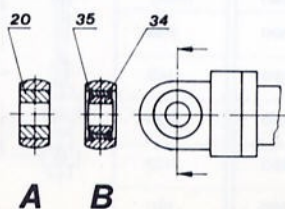
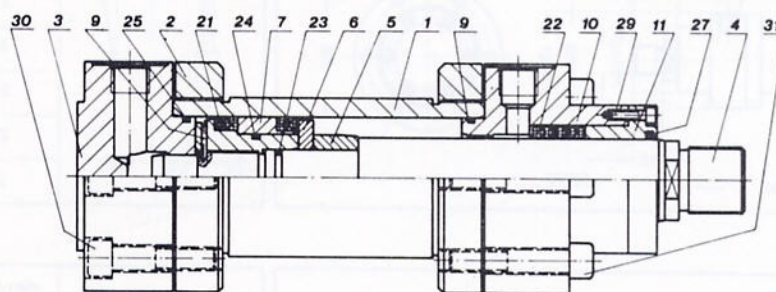
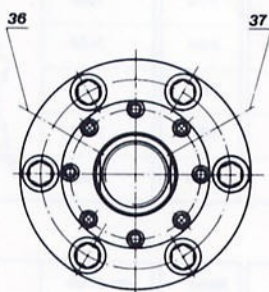
max. Hub (mm)
635
545
480
430
385



Masse der Zylinder

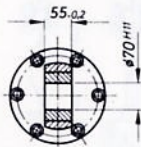
Schnittbild

Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg (Hub in mm)	$63 + 0,076 \cdot \text{Hub}$	$83 + 0,076 \cdot \text{Hub}$	$67 + 0,076 \cdot \text{Hub}$	$73 + 0,076 \cdot \text{Hub}$	$67 + 0,076 \cdot \text{Hub}$



doppeltwirkend

Stangenkopf



mit Gelenklager

mit Buchse

55
49
32
150
75
82
77
66
60
93
970-0012
M65x15
Zyl.-Schr. M12 x 50
DIN 912-8.8
SG 65 k
SB 65 k

Technical drawing of a 495-Hub, showing side and end views with dimensions. The side view includes dimensions: 120, 125, 85, 65, 75, 82, 235, 170, 150, 65x15, and R1 1/4". The end view includes dimensions: 55, 49, 70, and 70. The drawing is labeled "495-Hub" and "SW 75".

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
1744	200	1071
1562	250	945
1379	300	815
1258	350	731
1160	400	663

Links: $s = 0,7 \cdot l$
Rechts: $s = l$

Technical drawing of a shaft-hub assembly. The drawing includes a side view and a front view. Key dimensions and features are labeled:

- Side View Dimensions:**
 - Shaft diameter: $\phi 235$
 - Hub inner diameter: $\phi 150$
 - Hub outer diameter: $\phi 170$
 - Hub thickness: 70
 - Shaft length: 420 + Hub
 - Hub bore length: 45
 - Hub keyway length: 50
 - Hub keyway width: 5
 - Hub keyway depth: 5
 - Hub keyway radius: $R1\ 1/4"$
 - Hub keyway position: 90
 - Hub keyway diameter: $\phi 245_{+0.03}^{+0.04}$
 - Hub keyway thread: M63x1.5
 - Hub keyway material: SW75
- Front View Dimensions:**
 - Hub outer diameter: $\phi 335$
 - Hub bore diameter: $\phi 290$
 - Hub bore length: 25

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
1374	200	3812
1247	250	3440
1118	300	3082
1033	350	2840
965	400	2446

Links: $s = 2 \cdot l$
Rechts: $s = 0,7 \cdot l$

max. Hub (mm)	Nenn-druck (bar)	max. Hub (mm)
450	200	1668
386	250	1488
322	300	1304
279	350	1183
245	400	1086

[illegible]

max. Hub (mm)

2482	200	1585
2240	250	1416
1995	300	1244
1884	350	1132
1704	400	1041

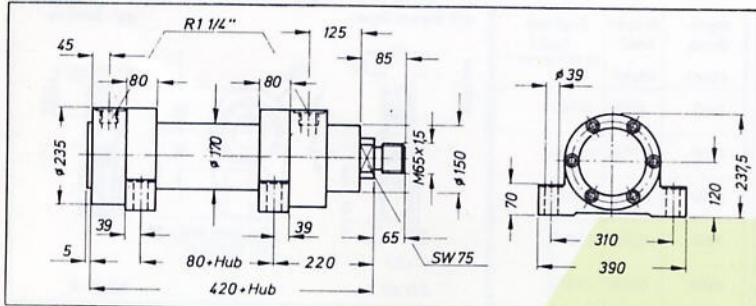
$s = 0,7 \cdot l$

max. Hub (mm)

2482	200	1585
2240	250	1416
1995	300	1244
1884	350	1132
1704	400	1041

$s = l$

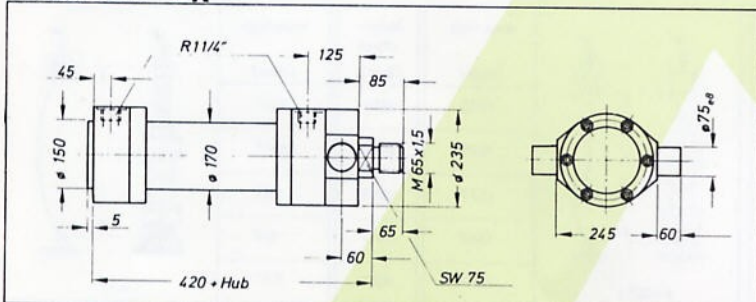
Bauform F



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
5550	200	3812
5050	250	3450
4530	300	3082
4185	350	2840
3920	400	2646

$s = 0,5 \cdot l$

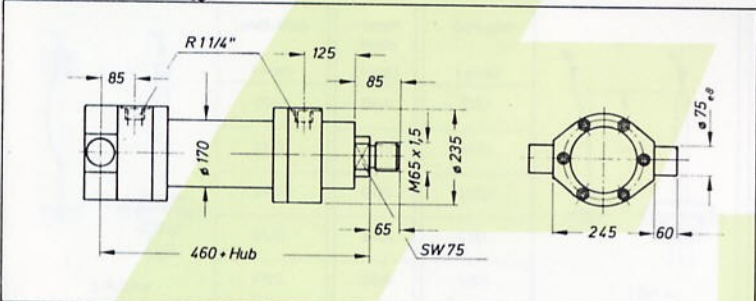
Bauform Ek



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
3 925	200	2 580
3 560	250	2 325
3 195	300	2 065
2 950	350	1 870
2 755	400	1 760

$s = 0,7 \cdot l$

Bauform Eb

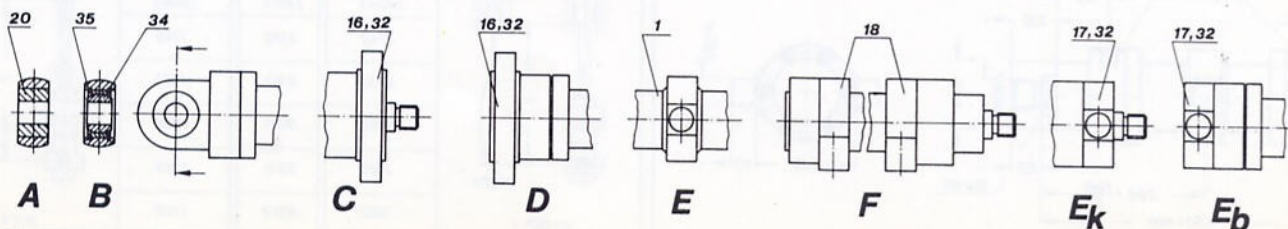
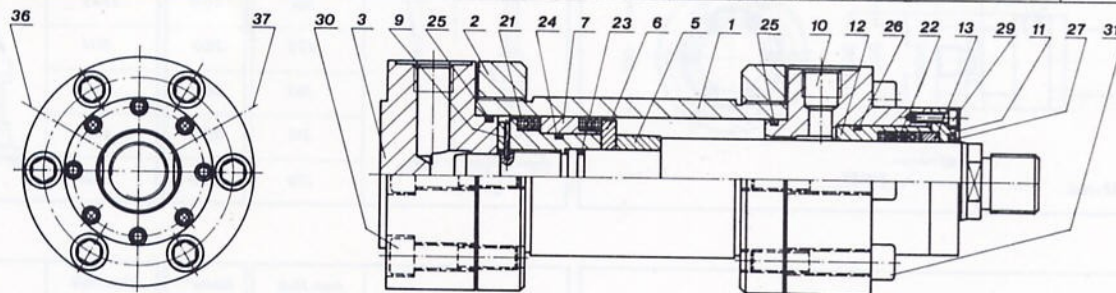


max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
1 760	200	1 090
1 580	250	965
1 400	300	835
1 275	350	750
1 180	400	680

$s = 0,7 \cdot l$

Masse der Zylinder Schnittbild

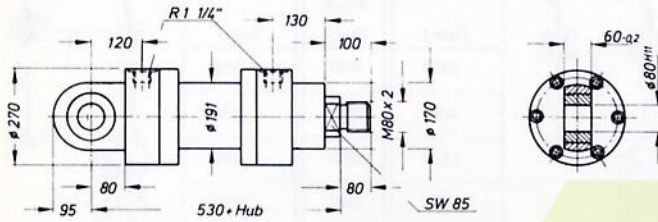
Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg (Hub in mm)	122 + 0,13 · Hub	164 + 0,13 · Hub	133 + 0,13 · Hub	132 + 0,13 · Hub	133 + 0,13 · Hub



Hydraulikzylinder Type ZD 400... 140/100

doppeltwirkend

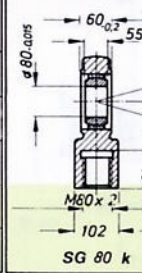
Bauform A



Stangenkopf

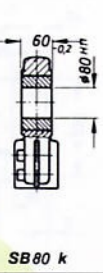
Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN) bei Kolbenstangen #
200	30195	14786
250	37744	18482
300	45293	22179
350	52842	25875
400	60391	29572

mit Gelenklager



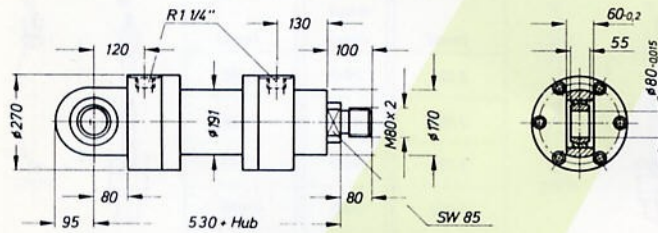
SG 80 k

mit Buchse

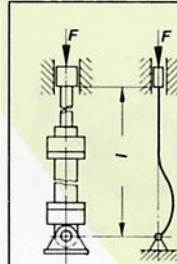


SB 80 k

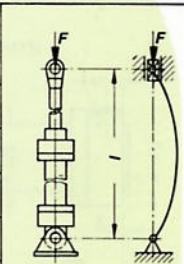
Bauform B



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
1930	200	1187
1699	250	1025
1527	300	905
1395	350	812
1287	400	737

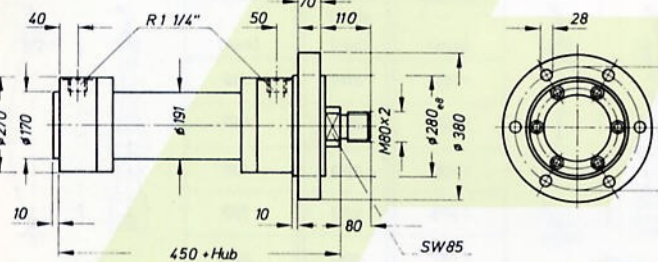


s = 0,7-l

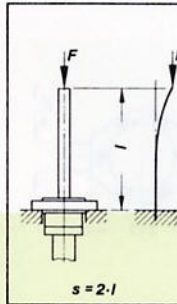


s = l

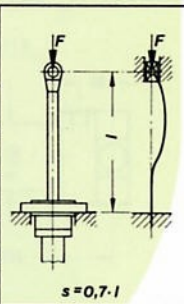
Bauform C



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
1517	200	4200
1355	250	3737
1235	300	3394
1142	350	3129
1067	400	2914

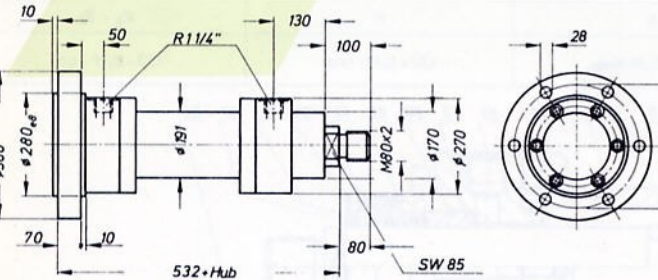


s = 2-l

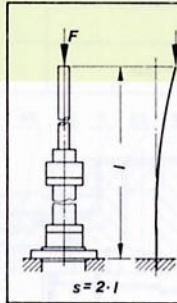


s = 0,7-l

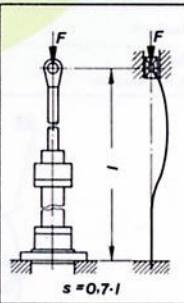
Bauform D



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
504	200	1845
423	250	1614
363	300	1442
316	350	1310
279	400	1202

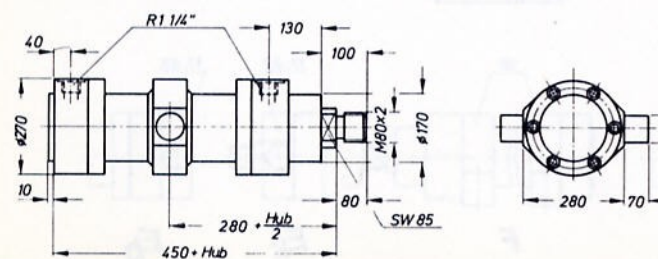


s = 2-l

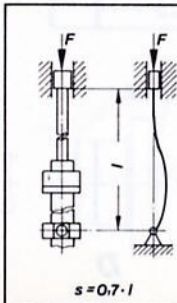


s = 0,7-l

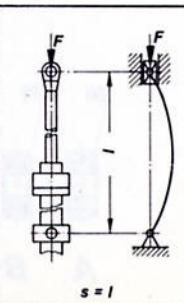
Bauform E



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
2740	200	1749
2432	250	1533
2203	300	1372
2026	350	1249
1883	400	1149



s = 0,7-l



s = l

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
6115	200	4200
5470	250	3737
4980	300	3394
4615	350	3129
4315	400	2914

Links: $s = 0,5 \cdot l$
Rechts: $s = 0,7 \cdot l$

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
4 335	200	2 870
3 875	250	2 545
3 530	300	2 305
3 265	350	2 120
3 050	400	1 970

Das Diagramm zeigt zwei Varianten der Federanordnung mit einer Federhärteberechnungstabelle.

Linke Variante (schiefe Federlinie): Die Feder ist schief angebracht, was zu einer effektiven Federhärte führt, die von der Geometrie abhängt. Die Formel $s = 0,7 \cdot l$ ist angegeben.

Rechte Variante (gerade Federlinie): Die Feder ist gerade angebracht, was zu einer anderen effektiven Federhärte führt. Die Formel $s = l$ ist angegeben.

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
1 955	200	1 210
1 720	250	1 050
1 550	300	930
1 420	350	835
1 310	400	760

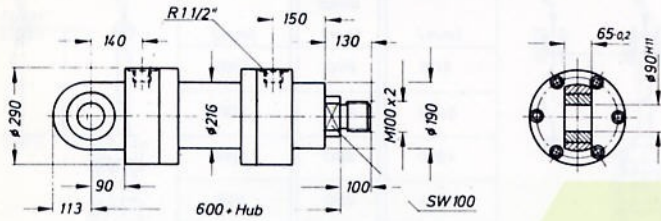
Bauform	A + B	C + D	E	F	$E_k + E_b$
Masse in kg (Hub in mm)	$190 + 0,162 \cdot \text{Hub}$	$246 + 0,162 \cdot \text{Hub}$	$213 + 0,162 \cdot \text{Hub}$	$208 + 0,162 \cdot \text{Hub}$	$213 + 0,162 \cdot \text{Hub}$



Hydraulikzylinder Type ZD 400... 160/110

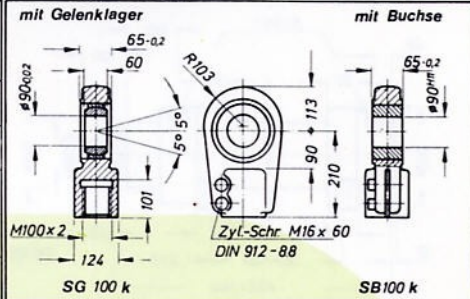
doppeltwirkend

Bauform A

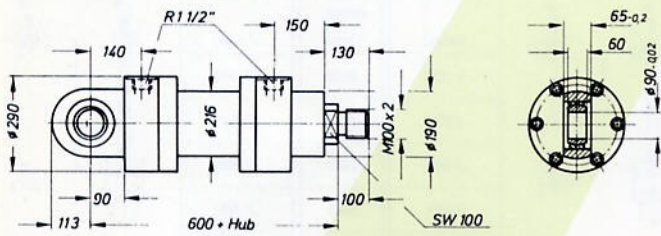


Stangenkopf

Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN) bei Kolbenstangen Ø 110
200	39448	20803
250	49310	26075
300	59172	31205
350	69034	36405
400	78896	41606



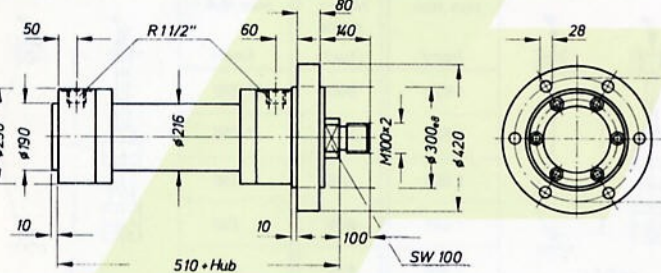
Bauform B



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
2024	200	1222
1779	250	1050
1582	300	912
1457	350	825
1343	400	745

s = 0,7 · l

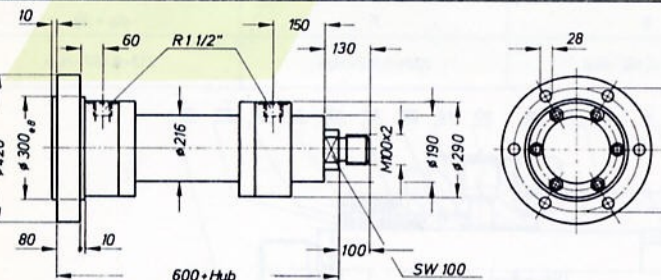
Bauform C



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
1597	200	4407
1425	250	3917
1287	300	3523
1200	350	3274
1120	400	3046

s = 2 · l

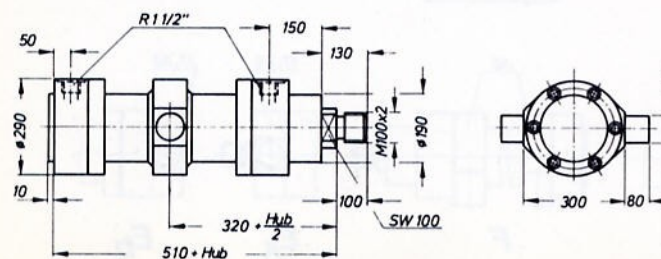
Bauform D



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
514	200	1919
428	250	1674
359	300	1477
315	350	1352
275	400	1238

s = 2 · l

Bauform E



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
2885	200	1815
2558	250	1587
2295	300	1403
2130	350	1287
1978	400	1180

s = 0,7 · l

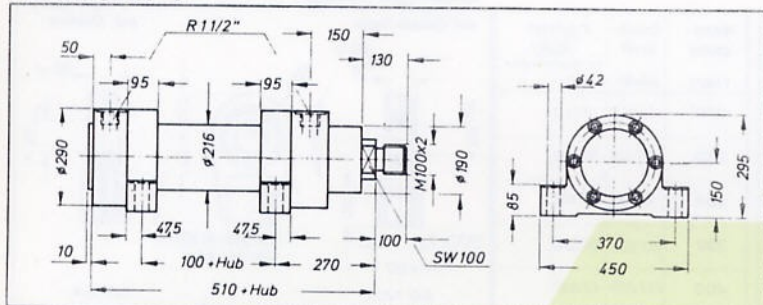


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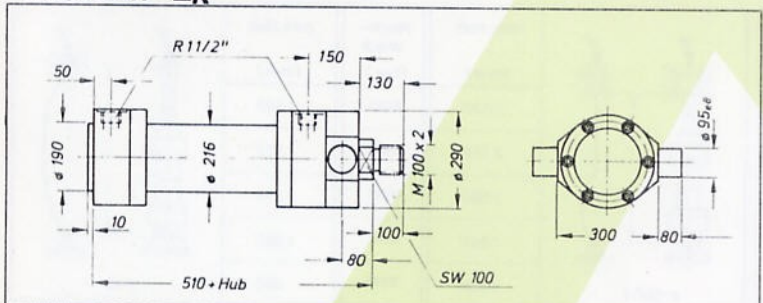
Bauform F



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
6470	200	4407
5790	250	3917
5230	300	3523
4890	350	3274
4570	400	3046

$s = 0.5 \cdot l$

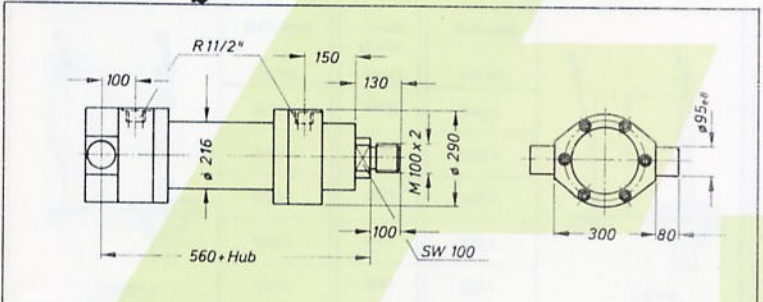
Bauform Ek



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
4 570	200	2 965
4 080	250	2 620
3 685	300	2 345
3 435	350	2 170
3 210	400	2 010

$s = 0.7 \cdot l$

Bauform Eb



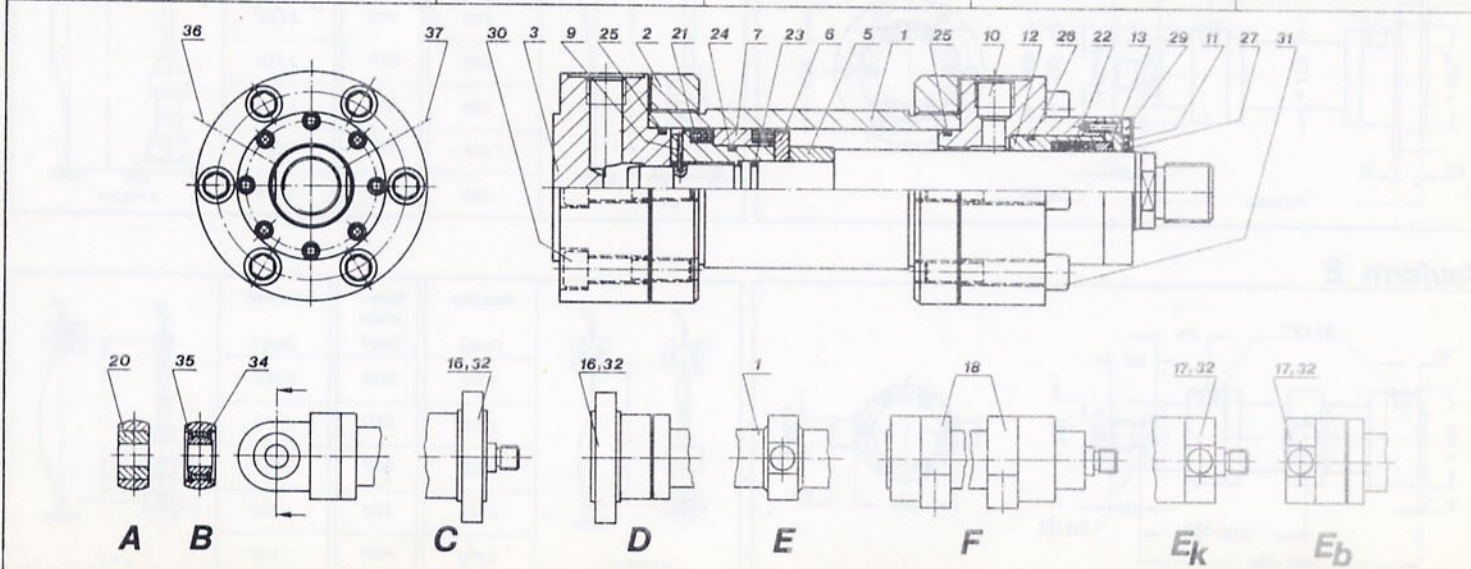
max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
2 045	200	1 245
1 800	250	1 070
1 605	300	935
1 480	350	845
1 395	400	765

$s = 0.7 \cdot l$

Masse der Zylinder

Schnittbild

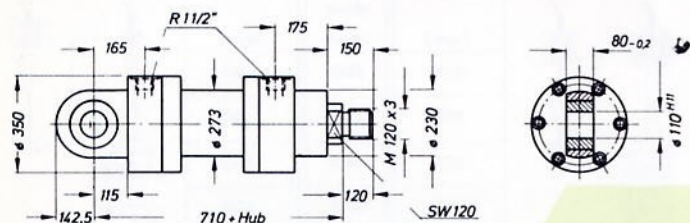
Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg (Hub in mm)	252 + 0,205 · Hub	338 + 0,205 · Hub	278 + 0,205 · Hub	304 + 0,205 · Hub	278 + 0,205 · Hub



Hydraulikzylinder Type ZD 400... 200/140

doppeltwirkend

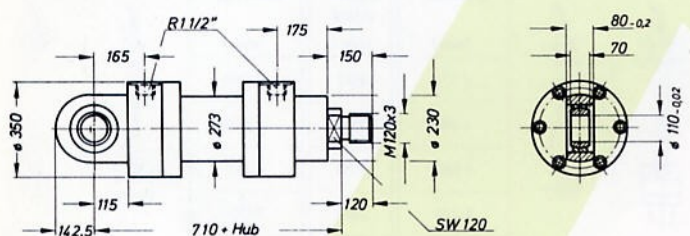
Bauform A



Stangenkopf

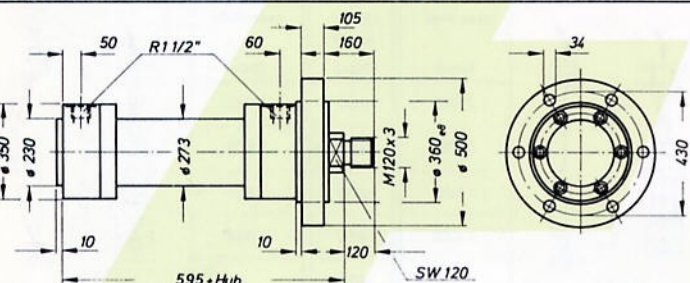
Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN) bei Kolbenstange $\varnothing$ 140	mit Gelenklager	mit Buchse
200	61 640	31 440		
250	75 045	39 300		
300	92 455	47 160		
350	107 860	55 020		
400	123 270	62 880		

Bauform B



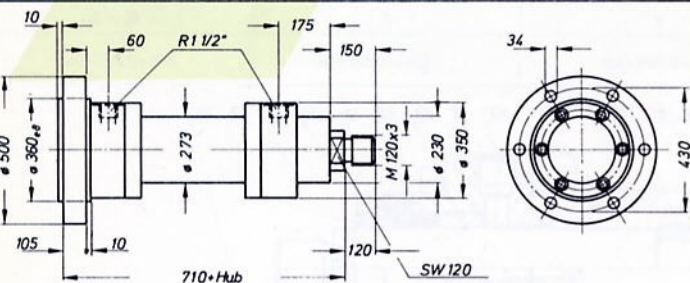
	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)	
	2 630	200	1 600	
	2 315	250	1 375	
	2 080	300	1 210	
	1 895	350	1 080	
	1 750	400	980	

Bauform C



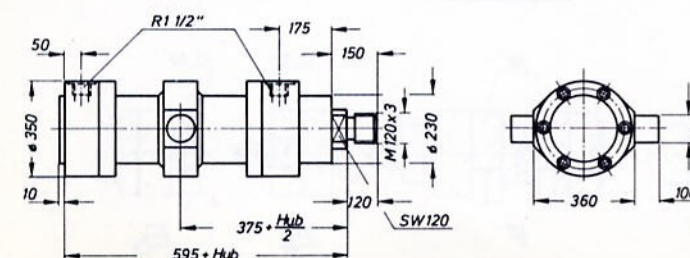
	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)	
	2 080	200	5 730	
	1 855	250	5 095	
	1 690	300	4 625	
	1 565	350	4 260	
	1 460	400	3 965	

Bauform D



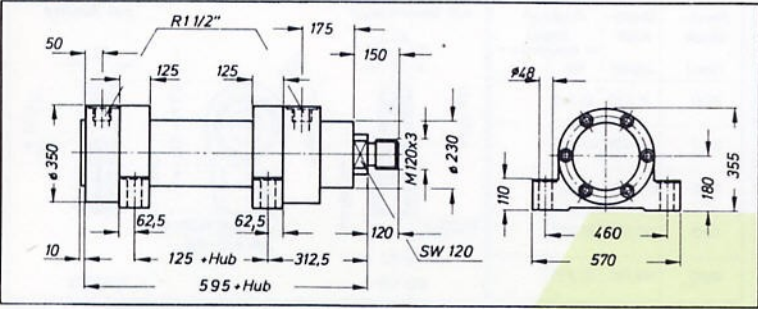
	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)	
	670	200	2 495	
	560	250	2 175	
	480	300	1 940	
	415	350	1 760	
	360	400	1 615	

Bauform E

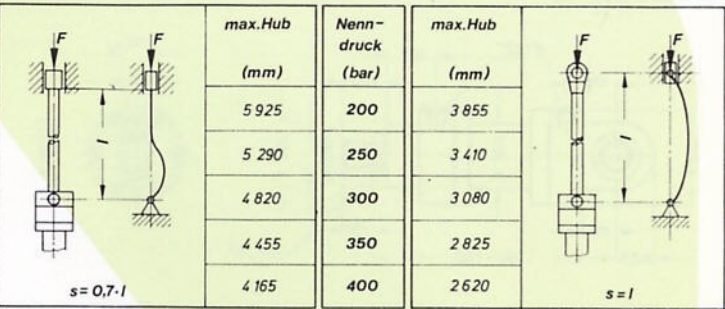
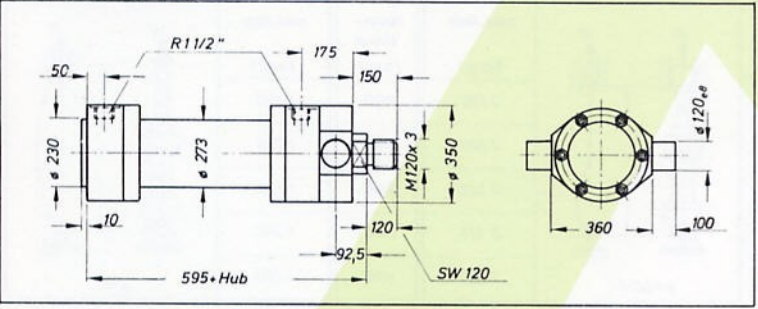


	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)	
	3 745	200	2 365	
	3 320	250	2 070	
	3 010	300	1 850	
	2 765	350	1 680	
	2 570	400	1 545	

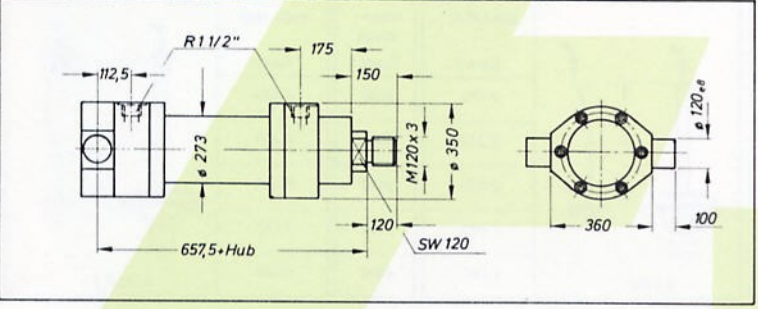
Bauform F



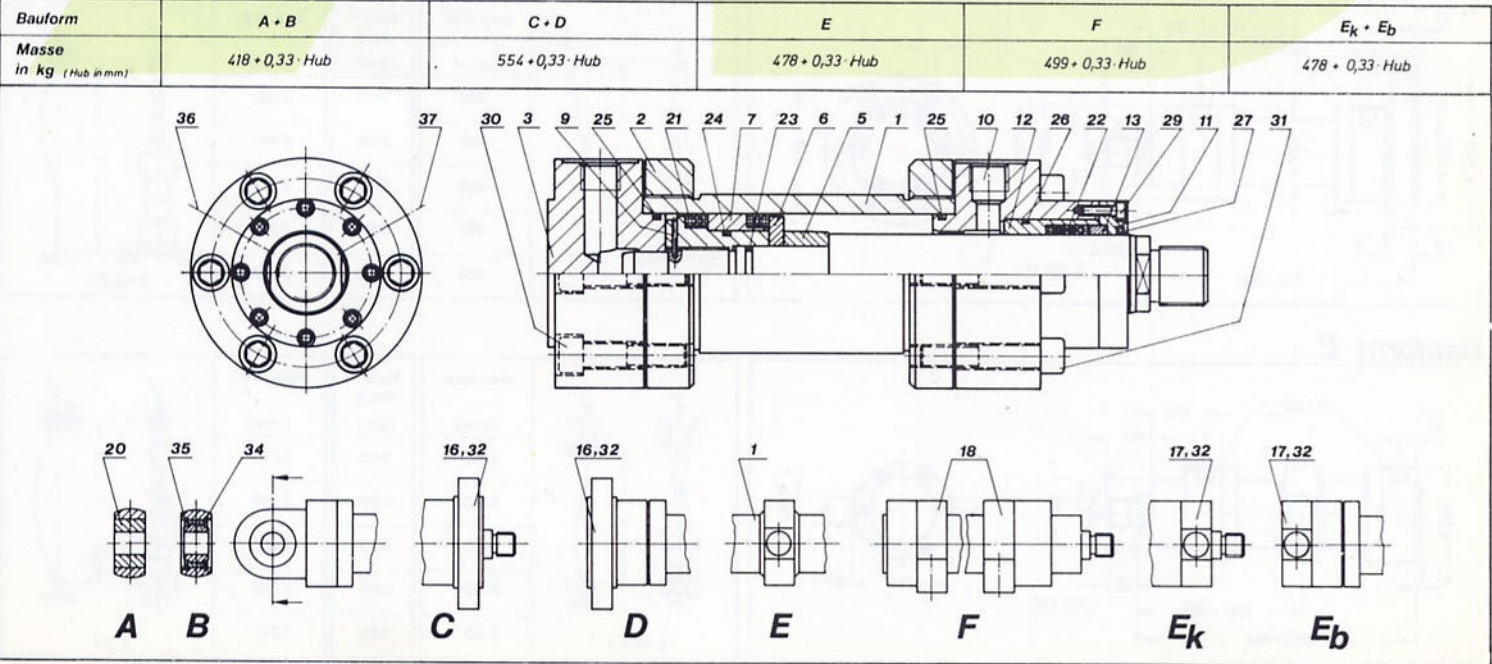
Bauform Ek



Bauform Eb



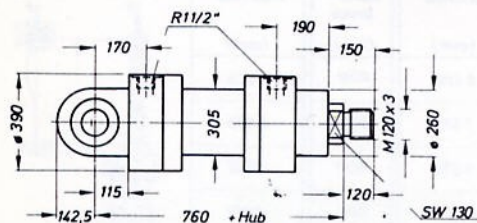
Masse der Zylinder Schnittbild



Hydraulikzylinder Type ZD 400... 220/160

doppeltwirkend

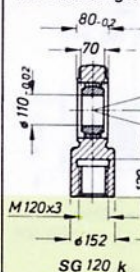
Bauform A



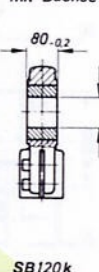
Stangenkopf

Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN) bei Kolbenstangen $\varnothing$ 160
200	74 580	35 140
250	93 230	43 920
300	111 870	52 300
350	130 520	61 490
400	149 170	70 270

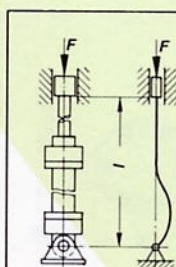
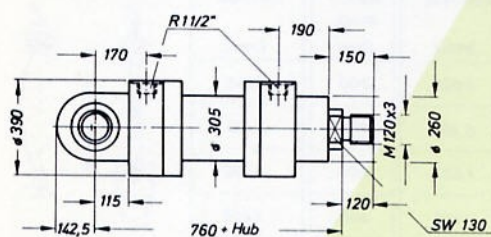
mit Gelenklager



mit Buchse



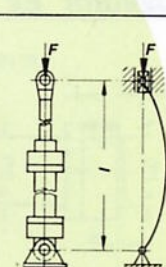
Bauform B



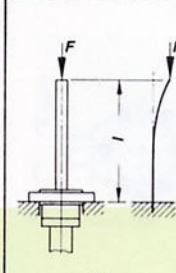
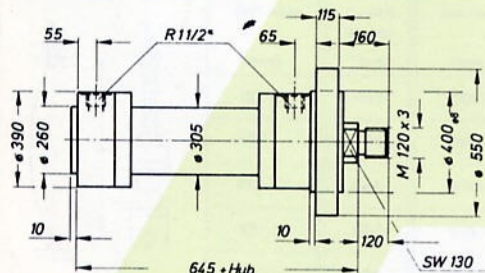
max. Hub (mm)
3 195
2 820
2 540
2 325
2 150

Nenn- druck (bar)
200
250
300
350
400

max. Hub (mm)
1 990
1 230
1 530
1 380
1 280



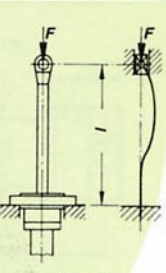
Bauform C



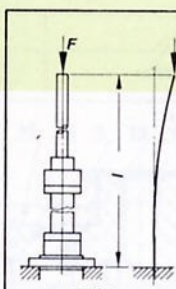
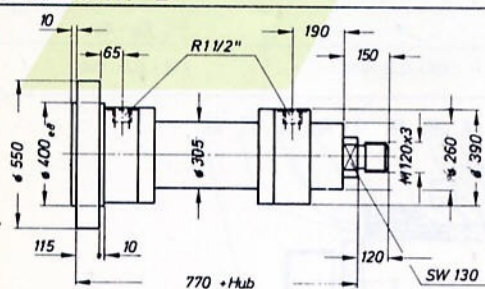
max. Hub (mm)
2 475
2 210
2 015
1 865
1 740

Nenn- druck (bar)
200
250
300
350
400

max. Hub (mm)
6 855
6 100
5 545
5 110
4 760



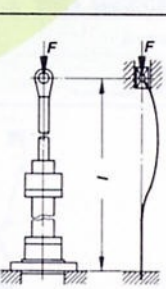
Bauform D



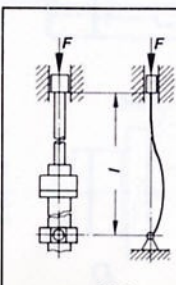
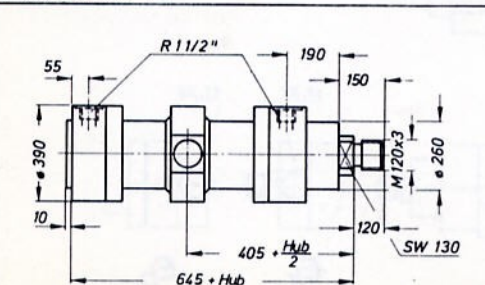
max. Hub (mm)
870
740
640
560
500

Nenn- druck (bar)
200
250
300
350
400

max. Hub (mm)
3 060
2 680
2 405
2 185
2 010



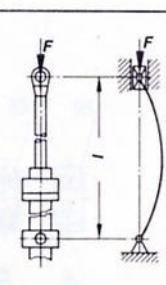
Bauform E



max. Hub (mm)
4 500
3 995
3 625
3 335
3 100

Nenn- druck (bar)
200
250
300
350
400

max. Hub (mm)
2 890
2 540
2 280
2 075
1 915



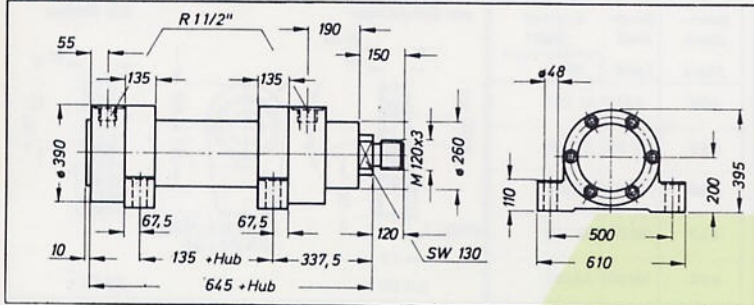


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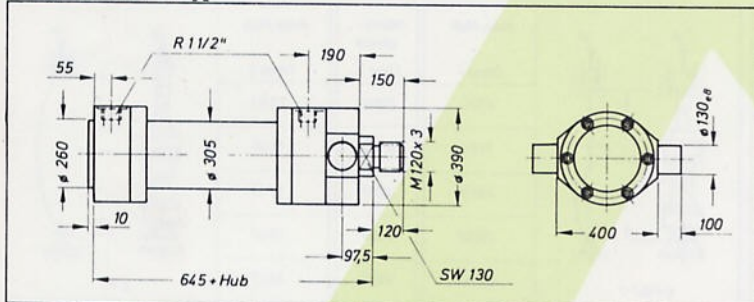
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Bauform F



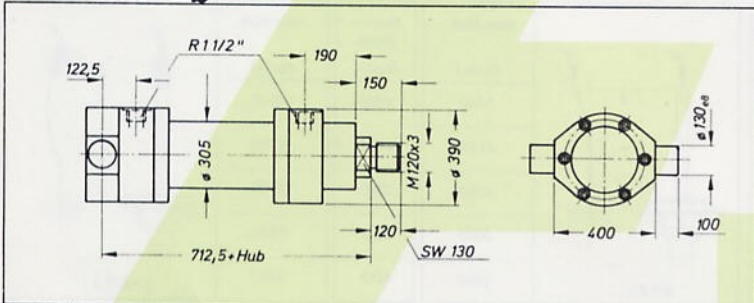
	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	9 980	200	6 855
	8 925	250	6 100
	8 135	300	5 545
	7 540	350	5 110
	7 050	400	4 760

Bauform Ek



	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	7 055	200	4 645
	6 300	250	4 115
	5 740	300	3 725
	5 310	350	3 425
	4 960	400	3 180

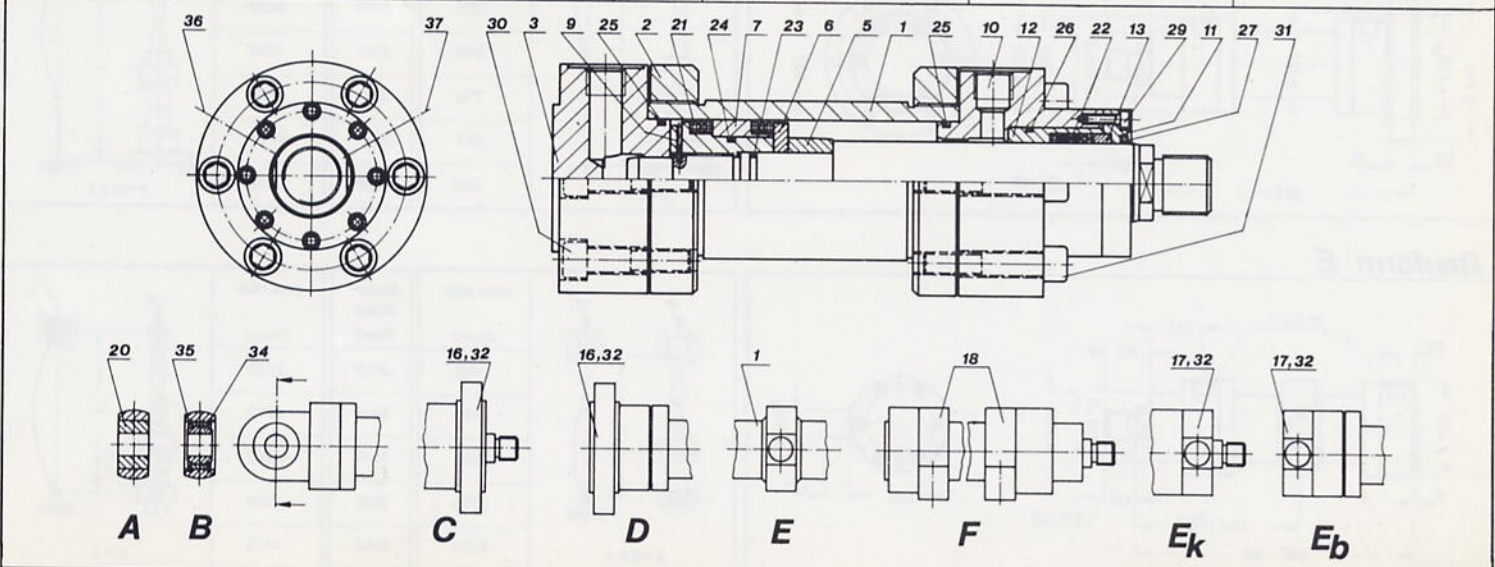
Bauform Eb



	max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
	3 220	200	2 015
	2 845	250	1 750
	2 565	300	1 555
	2 350	350	1 405
	2 175	400	1 280

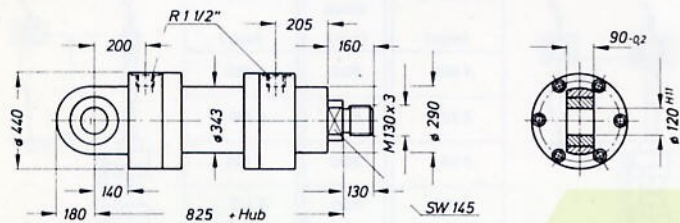
Masse der Zylinder Schnittbild

Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg (Hub in mm)	551 + 0,418 · Hub	700 + 0,418 · Hub	597 + 0,418 · Hub	664 + 0,418 · Hub	597 + 0,418 · Hub



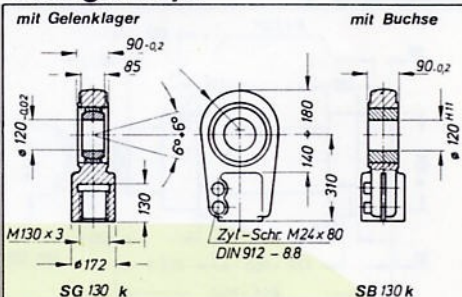
doppeltwirkend

Bauform A

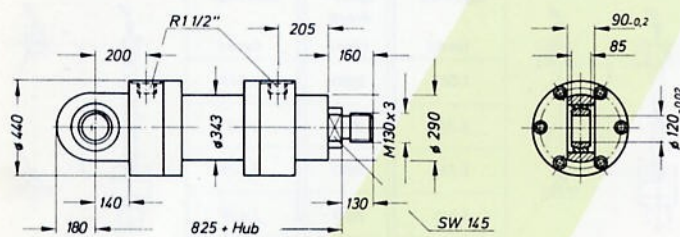


Stangenkopf

Nenn- druck (bar)	Druck- kraft (daN)	Zugkraft (daN) bei Kolbenstangen-Ø 180
200	96310	45 380
250	120 390	57 980
300	144 470	69 580
350	168 540	81 170
400	188 960	92 460



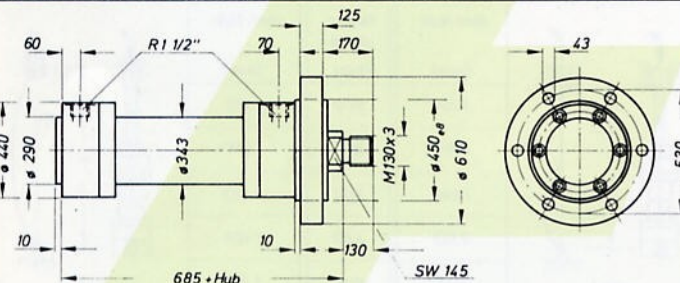
Bauform B



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
3570	200	2220
3150	250	1930
2840	300	1710
2600	350	1540
2410	400	1410

max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
3570	200	2220
3150	250	1930
2840	300	1710
2600	350	1540
2410	400	1410

Bauform C



Das Diagramm zeigt die Ermittlung der zulässigen Lasten für verschiedene Stützweiten s . Es ist in zwei Teile unterteilt: $s = 2 \cdot l$ (links) und $s = 0,7 \cdot l$ (rechts).

Links: $s = 2 \cdot l$

Die schematische Darstellung zeigt eine Stütze mit einer Kraft F an der Spitze. Die Stützweite ist $s = 2 \cdot l$. Die Tabelle zeigt die zulässigen Lasten:

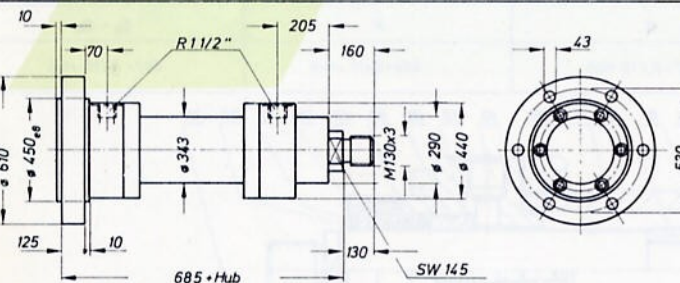
max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
2760	200	7625
2465	250	6785
2250	300	6165
2080	350	5680
1940	400	5290

Rechts: $s = 0,7 \cdot l$

Die schematische Darstellung zeigt eine Stütze mit einer Kraft F an der Spitze. Die Stützweite ist $s = 0,7 \cdot l$. Die Tabelle zeigt die zulässigen Lasten:

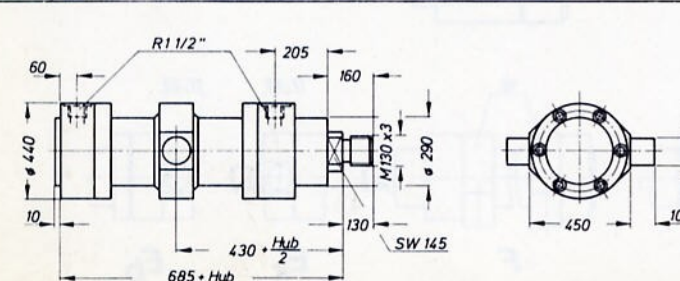
max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
2760	200	7625
2465	250	6785
2250	300	6165
2080	350	5680
1940	400	5290

Bauform D



max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
985	200	3420
840	250	3000
730	300	2690
645	350	2445
580	400	2250

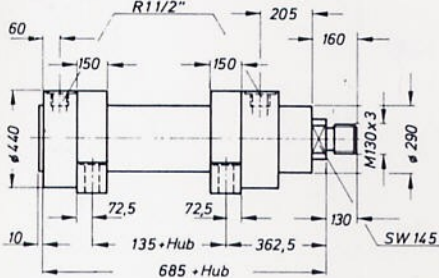
Bauform E

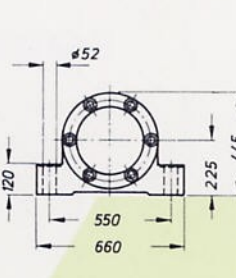


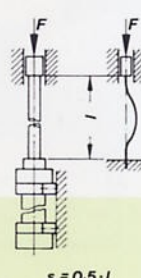
max. Hub (mm)	Nenn- druck (bar)
5025	200
4465	250
4050	300
3730	350
3470	400

max. Hub (mm)
3225
2830
2540
2320
2135

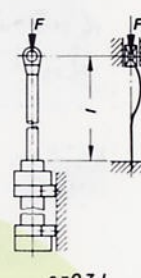
Bauform F



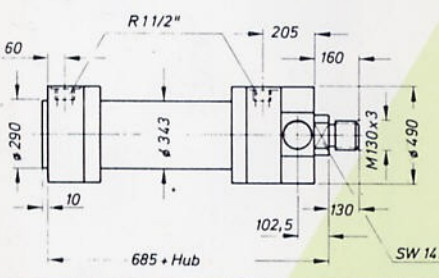


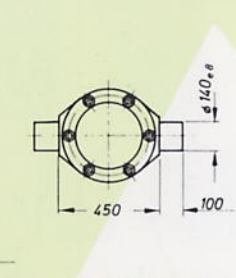


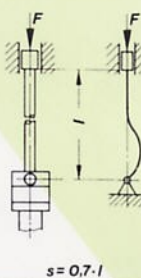
max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
11 120	200	7625
9940	250	6785
9075	300	6165
8400	350	5680
7855	400	5290



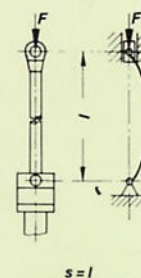
Bauform Ek



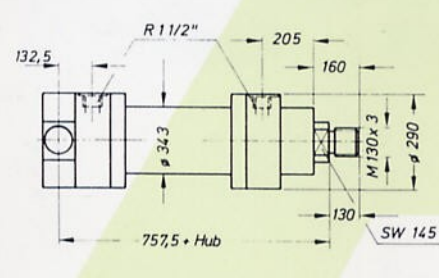


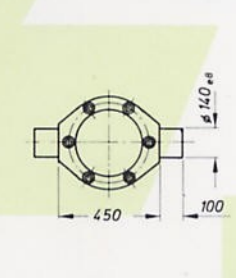


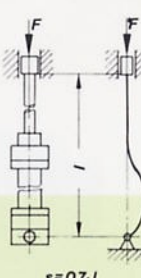
max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
7 897	200	5 195
7 050	250	4 605
6 430	300	4 170
5 950	350	3 835
5 560	400	3 560



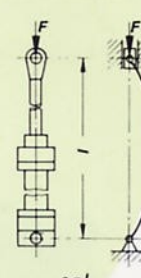
Bauform Eb





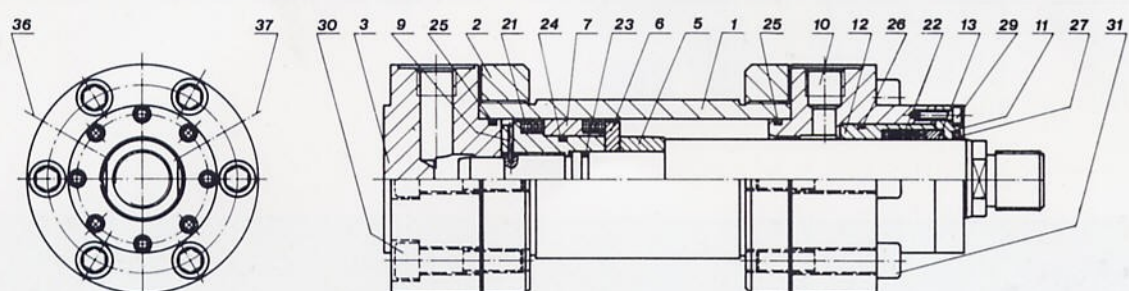


max. Hub (mm)	Nenn- druck (bar)	max. Hub (mm)
3 605	200	2 255
3 185	250	1 960
2 875	300	1 745
2 630	350	1 575
2 440	400	1 440



Masse der Zylinder Schnittbild

Bauform	A + B	C + D	E	F	Ek + Eb
Masse in kg (Hub in mm)	700 + 0,541 · Hub	902 + 0,541 · Hub	778 + 0,541 · Hub	813 + 0,541 · Hub	778 + 0,541 · Hub




A

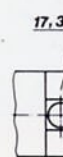

B


C


D

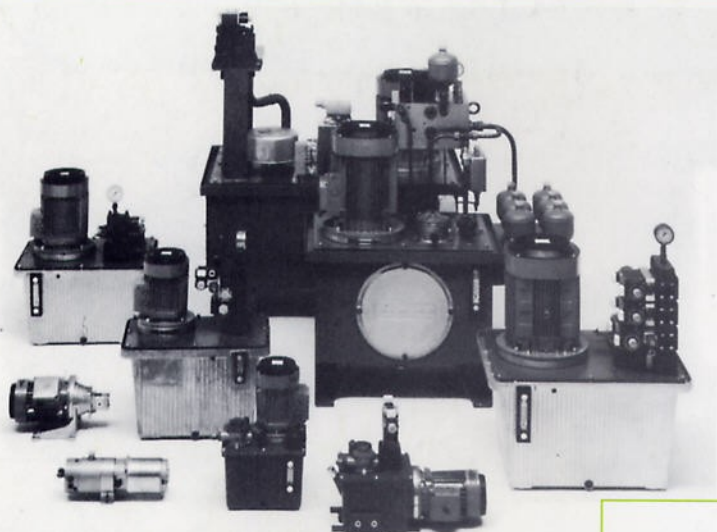

E


F


Ek


Eb

Aus unserem Hydraulik - Lieferprogramm:



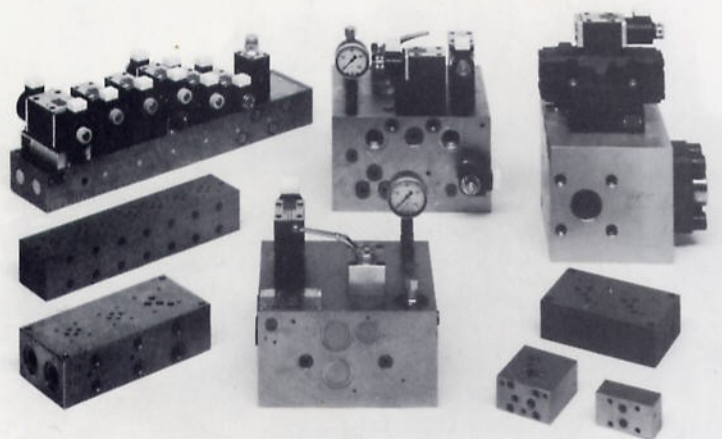
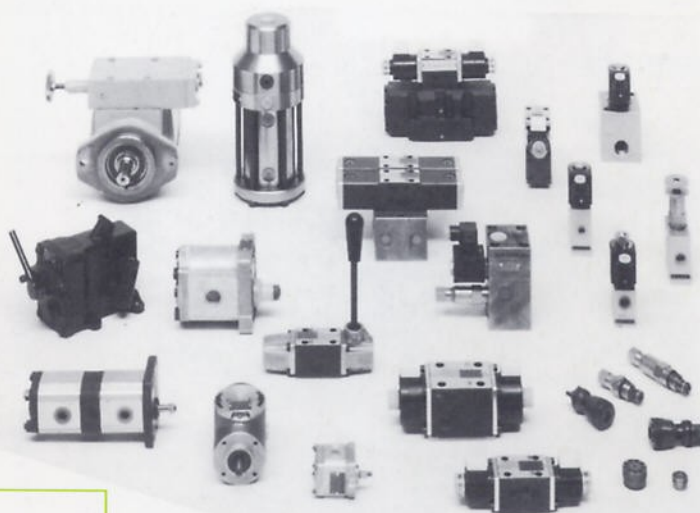
Aggregate

Prüfstände

Hydraulikpumpen

Hydraulikmotore

Ventile/Verkettungen



Steuerblöcke

Anschlußplatten

Blocksysteme



ABAG-Technik GmbH

oelhydraulik und verfahrenstechnik

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