

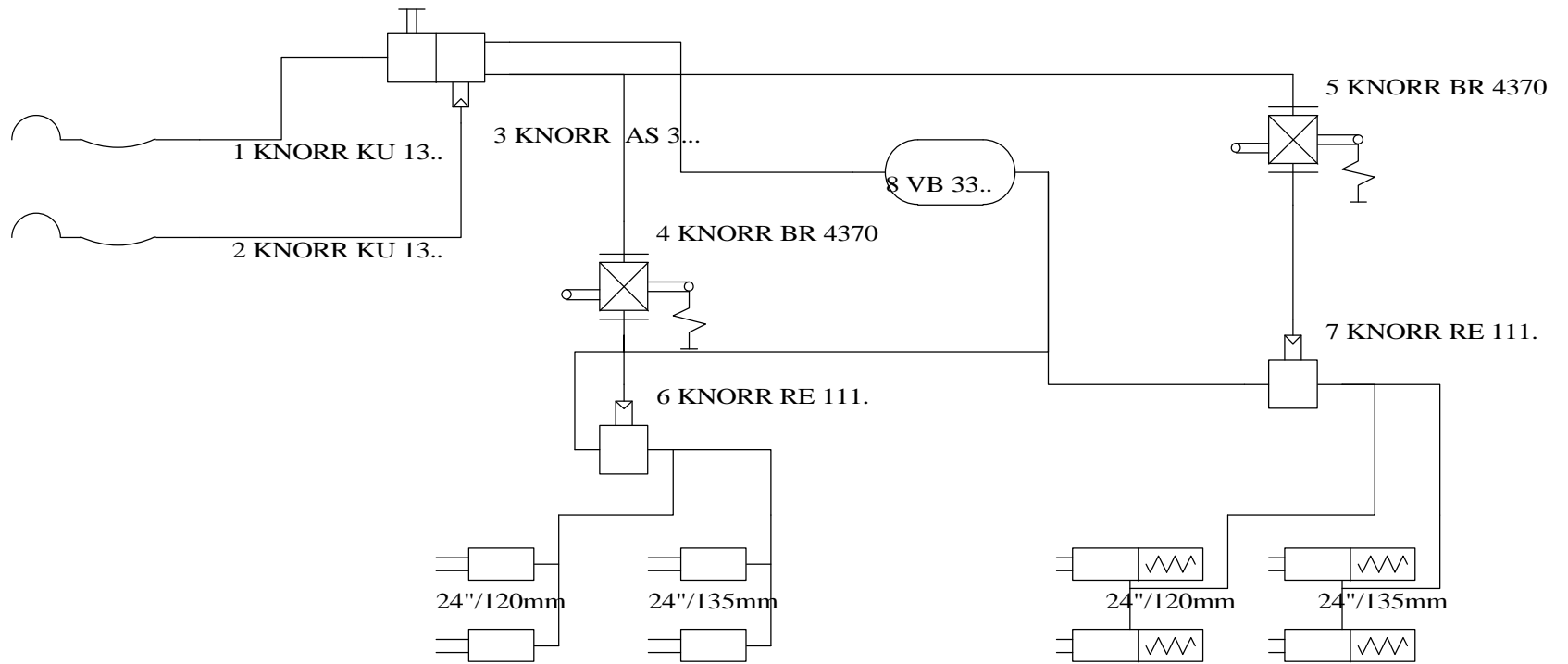
<p>Axle 1 ROR ROR Q 420x180 285/60R22.5 R dyn =441 mm 24" / 120mm</p>	<p>Axle 2 ROR ROR Q 420x180 285/60R22.5 R dyn =441 mm 24" / 135mm</p>	<p>Axle 3 ROR ROR Q 420x180 285/60R22.5 R dyn =441 mm 24" / 120mm</p>	<p>Axle 4 ROR ROR Q 420x180 285/60R22.5 R dyn =441 mm 24" / 135mm</p>
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<p>LSV-valve front axles: KNORR BR 4370 ALB i unloaded= 2,8 6,5 bar -> 2.48 bar ALB i loaded= 0 6,5 bar -> 0.00 bar</p>	<p>LSV-valve rear axles: KNORR BR 4370 ALB i unloaded= 3,2 6,5 bar -> 2.22 bar ALB i loaded= 0 6,5 bar -> 0.00 bar</p>
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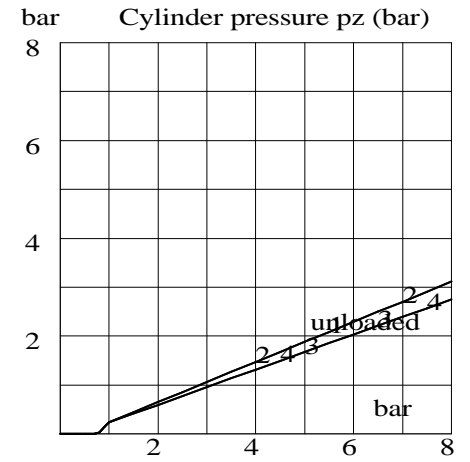
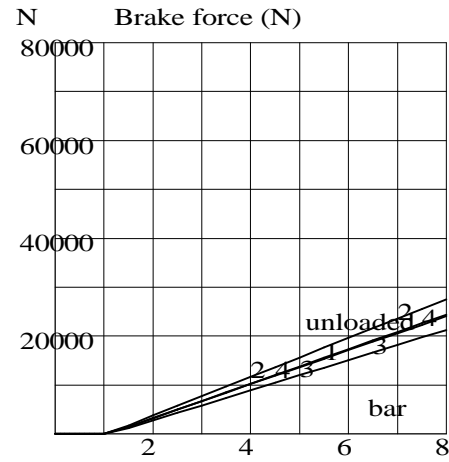
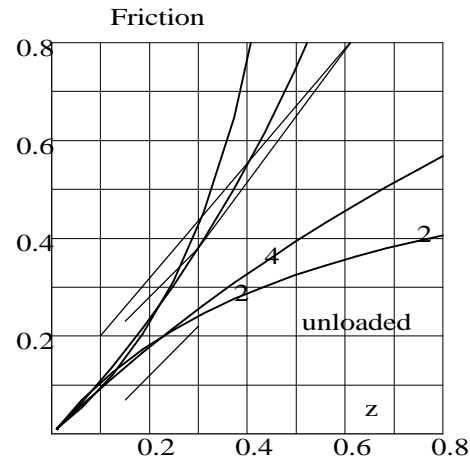
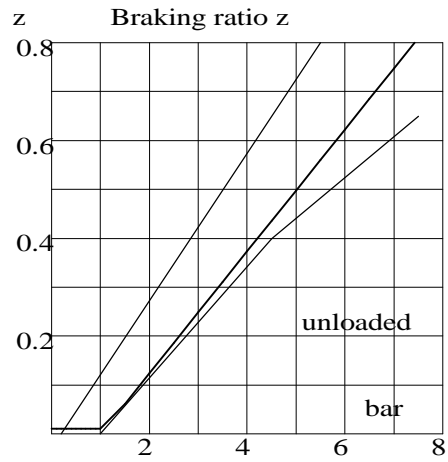


- 1 KNORR KU 13.. Hose Coupling, Supply line (Red)
- 2 KNORR KU 13.. Hose Coupling, Control line (Yellow)
- 3 KNORR AS 3... Relay Emergency Valve
- 4 KNORR BR 4370 Load Sensing Valve
- 5 KNORR BR 4370 Load Sensing Valve
- 6 KNORR RE 111. Relay Valve
- 7 KNORR RE 111. Relay Valve
- 8 VB 33.. Air Reservoir

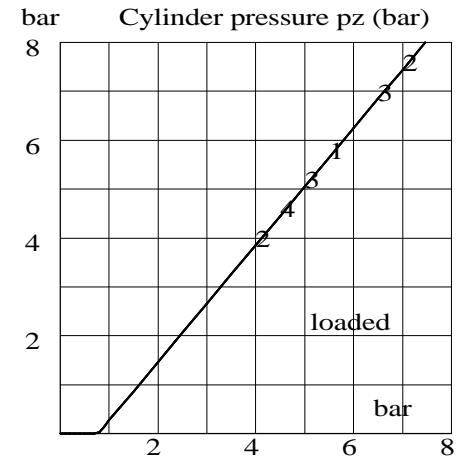
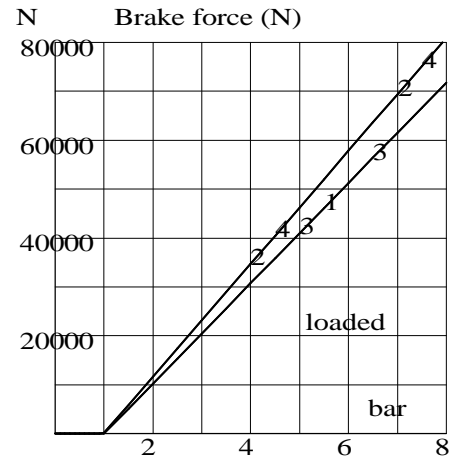
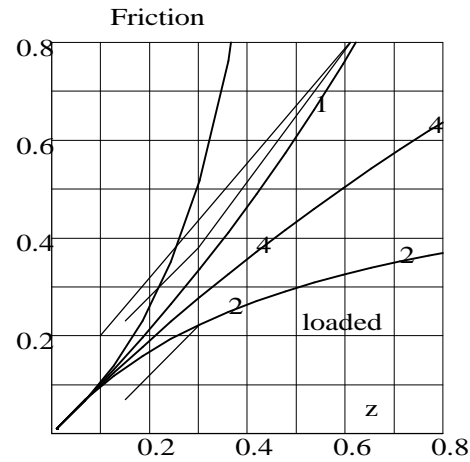
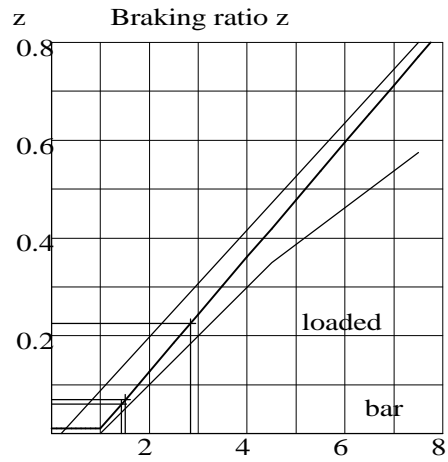
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unloaded ALB front axles: $i = 2,8$ (6,5 bar \rightarrow 2.48 bar) ALB rear axles: $i = 3,2$ (6,5 bar \rightarrow 2.22 bar)



loaded ALB front axles: $i = 0$ (6,5 bar \rightarrow 0.00 bar) ALB rear axles: $i = 0$ (6,5 bar \rightarrow 0.00 bar)

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ANHANG VII Calculation

Axle 1 ROR Q 420x180
Prüfbericht: RDW 19140485 Ext I
Axle 2 ROR Q 420x180
Prüfbericht: RDW 19140485 Ext I
Axle 3 ROR Q 420x180
Prüfbericht: RDW 19140485 Ext I
Axle 4 ROR Q 420x180
Prüfbericht: RDW 19140485 Ext I

Test: Typ I z=7%: Typ II z=6% :
 pm=1,51 pm=1,43

Braking forces in Test I and Test II

Axle 1 T = 6053 = 5.06%Pe T = 5231 = 4.37%Pe
Axle 2 T = 6844 = 5.72%Pe T = 5920 = 4.95%Pe
Axle 3 T = 6151 = 5.14%Pe T = 5330 = 4.45%Pe
Axle 4 T = 6942 = 5.8%Pe T = 6018 = 5.03%Pe

Calculated actuator stroke (mm)

Axle 1 sp= 75mm s= 38mm s= 50
Axle 2 sp= 75mm s= 43mm s= 56
Axle 3 sp= 75mm s= 38mm s= 50
Axle 4 sp= 75mm s= 43mm s= 56

Actuator force (N) pm=6.5 bar

Axle 1 pz= 6.8433bar ThA= 9521N ThA= 9521
Axle 2 pz= 6.8433bar ThA= 9521N ThA= 9521
Axle 3 pz= 6.8433bar ThA= 9521N ThA= 9521
Axle 4 pz= 6.8433bar ThA= 9521N ThA= 9521

Brake force (N)

Axle 1 T II= 47672N T II= 42357
Axle 2 T II= 47672N T II= 42357
Axle 3 T II= 47770N T II= 42455
Axle 4 T II= 47770N T II= 42455

Braking rate of the vehicle

0.65 0.51 0.46

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		pm = 4.5 bar => p2= unloaded / loaded
2	KNORR KU 13.. Hose Coupling, Control line (Yellow)	4.5 / 4.5
3	KNORR AS 3... Relay Emergency Valve	4.4 / 4.4
4	KNORR BR 4370 Load Sensing Valve ALB i unloaded= 2,8 6,5 bar -> 2.48 bar ALB i loaded= 0 6,5 bar -> 0.00 bar	4.2 / 1.7
6	KNORR RE 111. Relay Valve	4.5 / 1.7
5	KNORR BR 4370 Load Sensing Valve ALB i unloaded= 3,2 6,5 bar -> 2.22 bar ALB i loaded= 0 6,5 bar -> 0.00 bar	4.2 / 1.5
7	KNORR RE 111. Relay Valve	4.5 / 1.5
Valve Serie		
Axle 1 :: 2 3 4 6 0 0 0 0 0 0		
Axle 2 :: 2 3 4 6 0 0 0 0 0 0		
Axle 3 :: 2 3 5 7 0 0 0 0 0 0		
Axle 4 :: 2 3 5 7 0 0 0 0 0 0		
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Pressure table

	Axle	A 1	A 1	A 1	A 1		A 2	A 2	A 2	A 2		A 3	A 3	A 3	A 3		A 4	A 4	A 4	A 4
pM bar	Valve	2	3	4	6		2	3	4	6		2	3	5	7		2	3	5	7
0.0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
0.5		0.50	0.21	0.00	0.00		0.50	0.21	0.00	0.00		0.50	0.21	0.00	0.00		0.50	0.21	0.00	0.00
1.0		1.00	0.73	0.42	0.24		1.00	0.73	0.42	0.24		1.00	0.73	0.41	0.24		1.00	0.73	0.41	0.24
1.5		1.50	1.25	0.60	0.44		1.50	1.25	0.60	0.44		1.50	1.25	0.58	0.42		1.50	1.25	0.58	0.42
2.0		2.00	1.77	0.79	0.65		2.00	1.77	0.79	0.65		2.00	1.77	0.74	0.60		2.00	1.77	0.74	0.60
2.5		2.50	2.29	0.97	0.85		2.50	2.29	0.97	0.85		2.50	2.29	0.90	0.78		2.50	2.29	0.90	0.78
3.0		3.00	2.81	1.16	1.06		3.00	2.81	1.16	1.06		3.00	2.81	1.06	0.96		3.00	2.81	1.06	0.96
3.5		3.50	3.32	1.34	1.27		3.50	3.32	1.34	1.27		3.50	3.32	1.22	1.13		3.50	3.32	1.22	1.13
4.0		4.00	3.84	1.53	1.47		4.00	3.84	1.53	1.47		4.00	3.84	1.39	1.31		4.00	3.84	1.39	1.31
4.5		4.50	4.36	1.71	1.68		4.50	4.36	1.71	1.68		4.50	4.36	1.55	1.49		4.50	4.36	1.55	1.49
5.0		5.00	4.88	1.90	1.88		5.00	4.88	1.90	1.88		5.00	4.88	1.71	1.67		5.00	4.88	1.71	1.67
5.5		5.50	5.40	2.08	2.09		5.50	5.40	2.08	2.09		5.50	5.40	1.87	1.85		5.50	5.40	1.87	1.85
6.0		6.00	5.92	2.27	2.29		6.00	5.92	2.27	2.29		6.00	5.92	2.04	2.03		6.00	5.92	2.04	2.03
6.5		6.50	6.44	2.46	2.50		6.50	6.44	2.46	2.50		6.50	6.44	2.20	2.21		6.50	6.44	2.20	2.21
7.0		7.00	6.96	2.64	2.70		7.00	6.96	2.64	2.70		7.00	6.96	2.36	2.39		7.00	6.96	2.36	2.39
7.5		7.50	7.48	2.83	2.91		7.50	7.48	2.83	2.91		7.50	7.48	2.52	2.57		7.50	7.48	2.52	2.57
8.0		8.00	8.00	3.01	3.11		8.00	8.00	3.01	3.11		8.00	8.00	2.69	2.75		8.00	8.00	2.69	2.75
0.0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
0.5		0.50	0.21	0.00	0.00		0.50	0.21	0.00	0.00		0.50	0.21	0.00	0.00		0.50	0.21	0.00	0.00
1.0		1.00	0.73	0.44	0.27		1.00	0.73	0.44	0.27		1.00	0.73	0.44	0.27		1.00	0.73	0.44	0.27
1.5		1.50	1.25	0.98	0.87		1.50	1.25	0.98	0.87		1.50	1.25	0.98	0.87		1.50	1.25	0.98	0.87
2.0		2.00	1.77	1.52	1.47		2.00	1.77	1.52	1.47		2.00	1.77	1.52	1.47		2.00	1.77	1.52	1.47
2.5		2.50	2.29	2.06	2.06		2.50	2.29	2.06	2.06		2.50	2.29	2.06	2.06		2.50	2.29	2.06	2.06
3.0		3.00	2.81	2.60	2.66		3.00	2.81	2.60	2.66		3.00	2.81	2.60	2.66		3.00	2.81	2.60	2.66
3.5		3.50	3.32	3.14	3.26		3.50	3.32	3.14	3.26		3.50	3.32	3.14	3.26		3.50	3.32	3.14	3.26
4.0		4.00	3.84	3.68	3.86		4.00	3.84	3.68	3.86		4.00	3.84	3.68	3.86		4.00	3.84	3.68	3.86
4.5		4.50	4.36	4.22	4.45		4.50	4.36	4.22	4.45		4.50	4.36	4.22	4.45		4.50	4.36	4.22	4.45
5.0		5.00	4.88	4.76	5.05		5.00	4.88	4.76	5.05		5.00	4.88	4.76	5.05		5.00	4.88	4.76	5.05
5.5		5.50	5.40	5.30	5.65		5.50	5.40	5.30	5.65		5.50	5.40	5.30	5.65		5.50	5.40	5.30	5.65
6.0		6.00	5.92	5.84	6.25		6.00	5.92	5.84	6.25		6.00	5.92	5.84	6.25		6.00	5.92	5.84	6.25
6.5		6.50	6.44	6.38	6.84		6.50	6.44	6.38	6.84		6.50	6.44	6.38	6.84		6.50	6.44	6.38	6.84
7.0		7.00	6.96	6.92	7.44		7.00	6.96	6.92	7.44		7.00	6.96	6.92	7.44		7.00	6.96	6.92	7.44
7.5		7.50	7.48	7.46	8.04		7.50	7.48	7.46	8.04		7.50	7.48	7.46	8.04		7.50	7.48	7.46	8.04
8.0		8.00	8.00	8.00	8.64		8.00	8.00	8.00	8.64		8.00	8.00	8.00	8.64		8.00	8.00	8.00	8.64

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Table: Braking Force / Axle Weight / Friction

	Axle	A 1	A 2	A 3	A 4	A 1	A 2	A 3	A 4	A 1	A 2	A 3	A 4			
pM bar		FBr (N)	FBr (N)	FBr (N)	FBr (N)	N (N)	N (N)	N (N)	N (N)	u	u	u	u			
0.0	0.01	0	0	0	0	88302	88302	98088	98088	0.01	0.01	0.01	0.01			
1.0	0.01	0	71	0	71	88290	88364	98026	98100	0.01	0.01	0.01	0.01			
2.0	0.13	10200	11620	10200	11620	84402	107371	79019	101988	0.13	0.12	0.14	0.12			
3.0	0.24	20466	23169	20466	23169	80503	126436	59954	105887	0.26	0.19	0.35	0.23			
4.0	0.36	30733	34719	30733	34719	76604	145500	40890	109786	0.41	0.25	0.76	0.33			
4.5	0.42	35866	40494	35866	40494	74655	155033	31357	111735	0.49	0.27	1.15	0.37			
5.0	0.48	40999	46268	40999	46268	72705	164565	21825	113685	0.57	0.29	1.89	0.42			
6.0	0.60	51265	57818	51265	57818	68806	183630	2760	117584	0.76	0.32	18.58	0.50			
6.5	0.65	56398	63592	56398	63592	66857	193162	-6772	119533	0.85	0.34	-8.32	0.54			
7.0	0.71	61531	69367	61531	69367	64907	202695	-16305	121483	0.96	0.35	-3.76	0.58			
8.0	0.83	71797	80917	71797	80917	61008	221759	-35369	125382	1.19	0.37	-2.02	0.66			
0.0	0.01	0	0	0	0	26974	26974	29434	29434	0.01	0.01	0.01	0.01			
1.0	0.01	0	0	0	0	26974	26974	29434	29434	0.01	0.01	0.01	0.01			
2.0	0.12	3189	3732	2730	3216	25030	32316	24605	30864	0.14	0.13	0.12	0.11			
3.0	0.25	6718	7702	5818	6690	22940	38120	19295	32460	0.30	0.21	0.31	0.22			
4.0	0.37	10247	11673	8906	10164	20850	43923	13984	34057	0.50	0.28	0.65	0.31			
4.5	0.44	12011	13658	10450	11901	19805	46825	11329	34855	0.62	0.30	0.93	0.35			
5.0	0.50	13776	15643	11993	13637	18760	49727	8674	35654	0.74	0.32	1.39	0.39			
6.0	0.62	17305	19613	15081	17111	16670	55531	3363	37250	1.05	0.36	4.49	0.47			
6.5	0.68	19069	21598	16625	18848	15625	58433	708	38048	1.23	0.38	23.49	0.51			
7.0	0.75	20834	23583	18169	20585	14580	61335	-1947	38847	1.44	0.39	-9.32	0.54			
8.0	0.87	24363	27553	21257	24059	12491	67139	-7258	40443	1.96	0.42	-2.92	0.60			

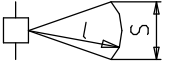
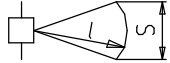
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Load sensitive valve (LSV)
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Front Axles			Rear Axles			
Suspension			Suspension			
Valve KNORR BR 4370			Valve KNORR BR 4370			
 l = 122 mm		Input Pressure 6,5 bar		 l = 128 mm		
Axle load	Output Pressure	Stroke s at lever	Axle load	Output Pressure	Stroke s at lever	
kg	bar	mm	kg	bar	mm	
18000	6.5	0	20000	6.5	0	
5500	2.5	31	6000	2.2	35	

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