

Screw jacks

3.4 Technical information

3.4.1 Table of settings

3.4.1.1 Worm gear screw jacks SHE

Size		0,5	1.1	2	3.1	5.1	(10)	15.1
Max. lifting capacity dyn/stat	[kN]	5/5	15/15	20/20	30/45	50/75	on request	100/150
Max. tensile load dyn/stat	[kN]	5/5	10/10	19/19	30/45	50/75		99/99
Screw Tr ¹⁾		18x6	24x5	26x6,28	30x6	40x7		60x12
Ratio N		10:1	5:1	6:1	6:1	6:1		7 2/3:1
Lift per revolution for ratio N	[mm/per rev.]	0,60	1,0	1,047	1,0	1,167		1,565
Ratio L		20:1	20:1	24:1	24:1	24:1		24:1
Lift per revolution for ratio L	[mm/per rev.]	0,30	0,25	0,262	0,25	0,292		0,50
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 20% - 60 min	[kW]	0,17	0,4	0,5	0,65	1,15		2,7
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 10% - 60 min	[kW]	0,25	0,6	0,75	1,25	1,9		3,85
Overall efficiency for ratio N	[%]	31	30	31	27	24		27
Overall efficiency for ratio L	[%]	24	23	18	19	16		17
Screw efficiency rating	[%]	54	41	45	40	36,5		39,5
Torque, capacity, turning-speed at 20 % ED/h and 20 °C		see performance tables 3.4.3.1						
Screw torque at max. lifting power	[Nm]	8,8	29,1	44	60	153	on request	702
Max. permitted drive-shaft torque	[Nm]	12	29,4	36	46,5	92		195
Max. permitted screw length for compression load	[mm]	see buckling diagrams 3.4.2						
Housing material		G-AlSiCu4			GGG			
Weight without stroke length and protection tube	[kg]	1,2	3,0	7,3	7,3	16,2	on request	26,5
Screw weight per 100 mm stroke	[kg]	0,14	0,26	0,32	0,45	0,82		1,79
Amount of lubricant in worm gear	[kg]	0,05	0,1	0,15	0,2	0,35		0,9
Mass moment of inertia J ³⁾ Ratio N type 1	[kg cm ²]	0,095	0,383	0,651	0,780	2,234		5,256
Mass moment of inertia J ³⁾ Ratio N type 2	[kg cm ²]	0,100	0,390	0,657	0,792	2,273		5,356
Mass moment of inertia J ³⁾ Ratio L type 1	[kg cm ²]	0,089	0,269	0,459	0,558	1,696		4,081
Mass moment of inertia J ³⁾ Ratio L type 2	[kg cm ²]	0,089	0,275	0,460	0,558	1,699		4,091

Dimension plans type 1 - chapter 3.5.1/type 2 - chapter 3.5.2

¹⁾ Also applies to Ku screw, see chapter 3.4.7

²⁾ Max. permitted values for type 1 and Tr screw.

Higher values are possible when using type 2 or Ku screw.

³⁾ Referring to 100 mm screw length

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20.1	25	35	50.1	75	100.1	150	200.1	Size
200/200	250/250	350/350	500/500	750/750	800/1000	1500/1500	2000/2000	Max. lifting capacity dyn/stat
178/200	250/250	350/350	500/500	750/750	800/1000	1500/1500	-	Max. tensile load dyn/stat
70x12	90x16	100x16	120x16	140x20	160x20	190x24	220x28	Screw Tr ¹⁾
8:1	10 2/3:1	10 2/3:1	10 2/3:1	12:1	12:1	19:1	17,5:1	Ratio N
1,50	1,50	1,50	1,50	1,667	1,667	1,263	1,60	Lift per revolution for ratio N
24:1	32:1	32:1	32:1	36:1	36:1	-	-	Ratio L
0,50	0,50	0,50	0,50	0,556	0,556	-	-	Lift per revolution for ratio L
3,8	5,0	6,0	7,4	9,0	12,5	18,5	on request	Max. drive capacity ²⁾ at T = 20 °C Duty type S3 20% - 60 min
5,4	7,2	8,6	10,4	12,6	17,5	26	on request	Max. drive capacity ²⁾ at T = 20 °C Duty type S3 10% - 60 min
24	22	21	15	18	15	15	17,5	Overall efficiency of ratio N
17	15	14	10	12	9	-	-	Overall efficiency of ratio L
37,5	36,5	34	30	31,6	28,5	28,8	29	Screw efficiency rating
see performance tables 3.4.3.1								Torque, capacity, turning-speed at 20 % ED/h and 20 °C
1061	1725	2600	4235	7550	11115	19850	30700	Screw torque at max. lifting power
280	480	705	840	2660	2660	4260	on request	Max. permitted drive-shaft torque
see buckling diagrams 3.4.2								Max. permitted screw length for compression load
GGG					GS			Housing material
36	70,5	87	176	ca. 350	538	850	ca. 1000	Weight without stroke length and protection tube
2,52	4,15	5,2	7,7	10,0	13,82	19,6	26,2	Screw weight per 100 mm stroke
2,0	1,3	2,5	4,0	5,0	10,0	10,0	on request	Amount of lubricant in worm gear
11,93	23,42	55,80	108,8	318,0	428,5	on request	on request	Mass moment of inertia J ³⁾ Ratio N type 1
12,14	23,74	56,30	109,9	325,2	431,3	on request	on request	Mass moment of inertia J ³⁾ Ratio N type 2
9,427	19,59	44,08	88,37	275,6	346,0	on request	on request	Mass moment of inertia J ³⁾ Ratio L type 1
9,451	19,62	44,13	88,49	279,4	346,3	on request	on request	Mass moment of inertia J ³⁾ Ratio L type 2

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3.4.1.2 Worm gear screw jacks MERKUR

Size		M0	M1	M2	M3	M4	M5	M6	M7	M8
Max. lifting capacity	[kN]	2,5	5	10	25	50	150	250	350	500
Max. tensile load	[kN]	2,5	5	10	25	50	150	250	350	500
Screw Tr ¹⁾		14x4	18x4	20x4	30x6	40x7	60x9	80x10	100x10	120x14
Ratio N		4:1	4:1	4:1	6:1	7:1	9:1	10:1	10:1	14:1
Lift per revolution for ratio N	[mm/rev.]	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Ratio L		16:1	16:1	16:1	24:1	28:1	36:1	40:1	40:1	56:1
Lift per revolution for ratio L	[mm/rev.]	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 20% - 60 min	[kW]	0,12	0,2	0,3	0,5	0,9	2,6	3,7	on request	on request
Max. drive capacity ²⁾ at T = 20 ° Duty type S3 10% - 60 min	[kW]	0,25	0,42	0,6	1,1	1,9	3,7	4,4	on request	on request
Overall efficiency of ratio N	[%]	34	30	28	27	25	19	19	15	15
Overall efficiency of ratio L	[%]	24	23	21	19	18	14	14	11	11
Screw efficiency rating	[%]	49	42,5	40	40	36,5	32,5	29	24	28
Torque, capacity, turning-speed at 20 % ED/h and 20 °C		see performance tables 3.4.3.2								
Screw torque at max. lifting power	[Nm]	3,2	7,5	16	60	153	437	1390	2312	4100
Max. permitted drive-shaft torque	[Nm]	1,5	3,4	7,1	18	38	93	240	340	570
Max. permitted screw length for compression load	[mm]	see buckling diagrams 3.4.2								
Housing material		Al-Leg			GG			GGG		
Weight without stroke length and protection tube	[kg]	0,6	1,2	2,1	6	17	32	57	85	160
Screw weight per 100 mm stroke	[kg]	0,1	0,35	0,45	0,7	1,2	2	4,2	6,6	10,3
Amount of lubricant in worm gear	[kg]	0,03	0,08	0,14	0,24	0,8	1,1	2,0	2,7	3,2
Mass moment of inertia J ³⁾ Ratio N type 1	[kg cm ²]	0,070	0,122	0,160	0,780	1,917	3,412	16,04	49,12	96,27
Mass moment of inertia J ³⁾ Ratio N type 2	[kg cm ²]	0,069	0,126	0,165	0,794	1,952	3,741	17,58	52,45	103,39
Mass moment of inertia J ³⁾ Ratio L type 1	[kg cm ²]	0,045	0,088	0,115	0,558	1,371	2,628	12,35	37,05	72,62
Mass moment of inertia J ³⁾ Ratio L type 2	[kg cm ²]	0,050	0,091	0,119	0,552	1,381	2,647	12,44	37,37	73,15

Dimension plans type 1 - chapter 3.6.1/type 2 - chapter 3.6.2

¹⁾ Also applies to Ku screw, see chapter 3.4.7

²⁾ Max. permitted values for type 1 and Tr screw. **Higher values are possible when using type 2 or Ku screw.**

³⁾ Referring to 100 mm screw length

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3.4.1.3 High performance worm gear screw jacks HSE

Size		32 ⁹⁾	36.1	50.1	63.1	80.1	100.1	125.1	140	200.1
Max. lifting capacity	[kN]	5	10	25	50	100	200	350		1000
Max. tensile load	[kN]	5	10	25	50	100	178	350		1000
Screw Tr ¹⁾		18x6	24x5	40x8	50x9	60x12	70x12	100x16		160x20
Ratio N		4:1	5:1	6:1	7:1	8:1	8:1	10 2/3:1		13 1/3:1
Lift per revolution for ratio N	[mm/per rev.]	1,5	1,0	1,33	1,28	1,5	1,5	1,5		1,5
Ratio L		16:1	20:1	24:1	28:1	32:1	32:1	32:1	on request	40:1
Lift per revolution for ratio L	[mm/per rev.]	0,375	0,25	0,33	0,32	0,375	0,375	0,5		0,5
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 20% - 60 min	[kW]	0,60	0,90	1,5	2,3	3,6	4,8	7,7		17,9
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 10% - 60 min	[kW]	1,0	1,5	2,6	4,0	6,3	8,4	13,5		31
Overall efficiency of ratio N	[%]	see efficiency ratings tables 3.4.5.3								
Overall efficiency of ratio L	[%]	see efficiency ratings tables 3.4.5.3								
Screw efficiency rating	[%]	54	41	40	36,5	39,5	35,5	34	on request	28,5
Torque, capacity, turning-speed at 20 % ED/h and 20 °C		see performance tables 3.4.3.3								
Screw torque at max. lifting power	[Nm]	7,4	18,4	80	190	478	1060	2600		11115
Max. permitted drive-shaft torque	[Nm]	12,6	29,4	48,7	168	398	705	975	on request	4260
Max. permitted screw length for compression load	[mm]	see buckling diagrams 3.4.2								
Housing material		AISI 12			GGG 50					
Weight without stroke length and protection tube	[kg]	2,0	4,0	13	25	47	74	145		870
Screw weight per 100 mm stroke	[kg]	0,16	0,23	0,82	1,3	1,79	2,52	5,2		13,82
Amount of lubricant in worm gear	[kg]	0,07	0,15	0,4	0,9	1,5	2,1	5,0		15,5
Mass moment of inertia J ³⁾ Ratio N type 1	[kg cm ²]	0,237	0,466	1,247	3,100	11,97	30,11	60,76	on request	-
Mass moment of inertia J ³⁾ Ratio N type 2	[kg cm ²]	0,270	0,513	1,364	3,378	13,05	32,21	65,76		-
Mass moment of inertia J ³⁾ Ratio L type 1	[kg cm ²]	0,150	0,204	0,638	1,804	8,13	20,91	44,88		-
Mass moment of inertia J ³⁾ Ratio L type 2	[kg cm ²]	0,153	0,207	0,645	1,822	8,20	21,04	45,43		-

Dimension plans type 1 - chapter 3.7.1/type 2 - chapter 3.7.2

¹⁾ Also applies to Ku screw, see chapter 3.4.7

²⁾ Max. permitted values for type 1 and Tr screw. **Higher values are possible when using type 2 or Ku screws.**

³⁾ Referring to 100 mm screw length

⁴⁾ Size 32 replaces previous size 31.

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3.4.1.4 Quick-lifting screw jacks SHG

Size		G 15	G 25	G 50	G 90
Max. lifting capacity	[kN]	15	25	50	90
Max. tensile load	[kN]	15	25	50	90
Screw Tr ¹⁾		24x5	35x8	40x7	60x9
Ratio N		2:1			
Lift per revolution for ratio N	[mm/rev.]	2,5	4	3,5	4,5
Ratio L		3:1			
Lift per revolution for ratio L	[mm/rev.]	1,66	2,67	2,33	3
Max. drive capacity 2) at T = 20 °C Duty type S3 20% - 60 min	[kW]	1,0	1,5	2,4	8,9
Max. drive capacity 2) at T = 20 °C Duty type S3 10% - 60 min	[kW]	1,3	2,6	3,8	13
Screw efficiency rating	[%]	41	43	37	33
Torque, capacity, turning-speed at 20 % ED/h and 20 °C		see performance tables 3,4,3,4			
Screw torque at max. lifting power	[Nm]	29,4	73,2	123,4	398,5
Max. permitted drive-shaft torque	[Nm]	50	125	175	1600
Max. permitted screw length for compression load	[mm]	see buckling diagrams 3,4,2			
Housing material		GG	AlSi10Mg	GG	
Weight without stroke length and protection tube	[kg]	9	13,5	23	85
Screw weight per 100 mm stroke	[kg]	0,8	0,59	1,5	2,5
Amount of lubricant in worm gear	[kg]	0,15	0,9	0,6	3,5
Mass moment of inertia J ³⁾ Ratio N type 1	[kg cm ²]	1,058	6,63	22,44	181,28
Mass moment of inertia J ³⁾ Ratio N type 2	[kg cm ²]	1,079	6,79	22,89	184,92
Mass moment of inertia J ³⁾ Ratio L type 1	[kg cm ²]	0,677	3,60	7,248	123,79
Mass moment of inertia J ³⁾ Ratio L type 2	[kg cm ²]	0,691	3,67	7,393	126,28

Dimension plans type 1 - chapter 3.8.1/type 2 - chapter 3.8.2

¹⁾ Also applies to Ku screw, see chapter 3.4.7

²⁾ Max. permitted values for type 1 and Tr screw.

Higher values are possible when using type 2 or Ku screw.

³⁾ Referring to 100 mm screw length