PROVISIONAL PRE-DIMENSIONING TABLE

for KRINNER Ground Screws

The values in the table below are only provided for rough pre-dimensioning for creating an offer. The final foundation design must be based on onsite load tests and a structural analysis proving the internal load bearing capacity of the KRINNER Ground Screw in compliance with DIN EN 18800, based on a relevant structural analysis model.

Item	KRINNER screw foundation		Tube diameter		Steel tube	Steel tube	Flange plate	Load values (tension in N/compression/horizontal)		
	Type desig. New version	Type desig. Old version	ø	Wall thickness	MRd, el kNm	MRd, pl kNm	MRd, el kNm	Compression (kN)	Tension (kN)	Horizontal (kN)
E-Series										
1		(KSF FEL 140x2000)	139.70	3.60	11.140	15.980		72.50	40.00	19.50
	KSF E 140x2100-E76-100		139.70	3.60	△	△		△	△	△
2		(KSF FEL 140x1600)	139.70	3.60	11.140	15.980		54.00	30.00	15.50
	KSF E 140x1600-E76-100		139.70	3.60	△	△		△	△	△
3		(KSF FEK 140x1400)	139.70	3.60	11.140	15.980		40.00	20.50	10.50
	KSF E 140x1300-E76-100		139.70	3.60	△	△		△	△	△
4		(KSF 90x1000)	88.90	3.60	4.314	6.290		27.00	13.50	4.50
	KSF E 89x1000-E60		88.90	3.60	△	△		△	△	△
5		(KSF 90x800)	88.90	3.60	4.314	6.290		22.50	10.50	3.50
	KSF E 89x800-E60		88.90	3.60	△	△		△	△	△
6		(KSF 90x550)	88.90	3.60	4.314	6.290		18.00	8.50	2.00
	KSF E 89x550-E60		88.90	3.60	△	△		△	△	△
F-Series										
7		(KSF FPL 140x1600)	139.70	3.60	11.140	15.980	3.97	54.00	30.00	15.50
	KSF F 140x1600-P		139.70	3.60	△	△	△	△	△	△
8		(KSF FPK 140x1400)	139.70	3.60	11.140	15.980	3.97	40.00	20.50	10.50
	KSF F 140x1300-P		139.70	3.60	△	△	△	△	△	△
9		(KSF FPM 140x2000)	139.70	3.60	11.140	15.980	3.97	72.50	40.00	19.50
	KSF F 140x2100-M		139.70	3.60	△	△	△	△	△	△
10		(KSF FPM 140x1600)	139.70	3.60	11.140	15.980	3.97	54.00	30.00	15.50
	KSF F 140x1600-M		139.70	3.60	△	△	△	△	△	△
11		(KSF R76x1600)	76.10	3.60	3.097	4.550		35.00	21.50	8.50
	KSF F 76x1600-R		76.10	3.60	△	△		△	△	△
12		(KSF R76x1200)	76.10	3.60	3.097	4.550		25.00	12.50	5.50
	KSF F 76x1300-R		76.10	2.60	2.328	3.065		△	△	△
13		(KSF R76x1000)	76.10	3.60	3.097	4.550		16.50	9.50	4.50
	KSF F 76x1000-R		76.10	2.60	2.328	3.065		△	△	△
14		(KSF R76x800)	76.10	3.60	3.097	4.550		13.50	7.00	3.50
	KSF F 76x800-R		76.10	2.60	2.328	3.065		△	△	△
G-Series										
15		(KSF G3 114x1400)	114.30	3.60	7.329	10.610		40.00	21.00	10.00
	KSF G 114x1300-4xM16		114.30	3.60	△	△		△	△	△
16		(KSF G3 114x1000)	114.30	3.60	7.329	10.610		20.00	10.50	6.00
	KSF G 114x1000-4xM16		114.30	3.60	△	△		△	△	△
17		(KSF G4 90x1200)	88.90	2.60	3.224	4.650		18.00	10.00	4.20
	KSF G 89x1300-4xM12		88.90	2.60	△	△		△	△	△
18		(KSF G4 90x1000)	88.90	2.60	3.224	4.650		14.50	7.50	3.20
	KSF G 89x1000-4xM12		88.90	2.60	△	△		△	△	△
19		(KSF G4 90x800)	88.90	2.60	3.224	4.650		10.50	6.00	2.50
	KSF G 89x800-4xM12		88.90	2.60	△	△		△	△	△
20		(KSF PV T76x2000)	76.10	4.00	3.386	4.990		45.00	32.50	11.50
	KSF G 76x2100-3xM16		76.10	3.60	3.097	4.100		△	△	△
21		(KSF PV T76x1600)	76.10	4.00	3.386	4.990		35.00	21.50	8.50
	KSF G 76x1600-3xM16		76.10	3.60	3.097	4.100		△	△	△
22		(KSF PV T76x1200)	76.10	4.00	3.386	4.990		25.00	12.50	5.50
	KSF G 76x1300-3xM16		76.10	3.60	3.097	4.100		△	△	△
23		(KSF G4 76x800)	76.10	2.00	1.834	2.640		5.50	4.00	2.00
	KSF G 76x800-4xM12		76.10	2.60	2.328	3.065		△	△	△
24		(KSF G3 66x700)	66.00	2.00	1.363	1.970		3.50	2.25	1.00
	KSF G 66x650-3xM8		66.00	2.00	△	△		3.00	2.00	0.75
25		(KSF 66x650)	66.00	2.00	1.363	1.970		3.00	2.00	0.75
	KSF G 66x650-1xM8		66.00	2.00	△	△		△	△	△
26		(KSF 66x550)	66.00	2.00	1.363	1.970		2.50	1.70	0.50
	KSF G 66x550-1xM8		66.00	2.00	△	△		△	△	△

*In the context of the former geotechnical standard DIN 1054, Nov. 1976 global safety factor approx. 2.0

The stated load bearing capacity values were determined in soil of type: loam, semisolid (TL, TM).

The load values on the ground screws are design loads that have already been reduced by partial safety factors pursuant to DIN 1054 and DIN 18800. Steel loads are to be compared with the design acting loads. The stated values are designed for a foundation built as follows: Upper foundation edge rises max. 5 cm above upper edge of terrain (OKG +5 cm). Factors for calculating the KRINNER screw foundation are the necessary dimensions and quantity of screws, the type of soil, the size, weight and wind and snow loads on the respective superstructures. Our technical advisors will gladly assist you.

When planning and pre-dimensioning the screw foundations, defaults must be defined for the installation accuracy. This includes permissible deviations (tolerances) of position and installation height, which should be included in the structural analysis of the overall system.

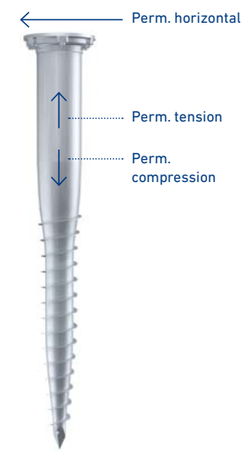
Permissible deviations are determined as follows:
- Given the type of system, an upper construction can compensate for certain deviations in the foundation. Tolerances smaller than the deviations must be defined for this.
- A deviation in the foundation position can influence the structural system. If the maximum deviations are exceeded, then a test is required.
- A minimum installation tolerance must be defined depending on the homogeneity of the soil.

Other technical details to be taken into consideration are provided in our current KRINNER Ground Screws product catalogue and at www.schraubfundamente.de.

Liability for damage due to inadequate or faulty structural analysis is excluded.

Legend

M	Moment
Rd	Design resistive load
el	(elastic) Elastic value
pl	(plastic) Plastic value



PROVISIONAL PRE-DIMENSIONING TABLE

for KRINNER Ground Screws

The values in the table below are only provided for rough pre-dimensioning for creating an offer. The final foundation design must be based on onsite load tests and a structural analysis proving the internal load bearing capacity of the KRINNER Ground Screw in compliance with DIN EN 18800, based on a relevant structural analysis model.

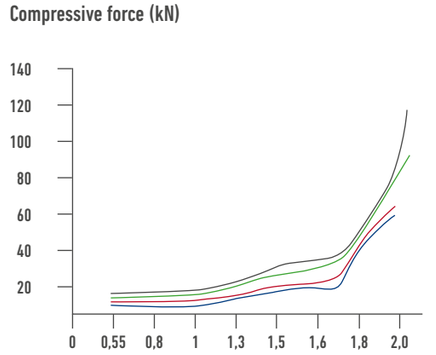
Item	KRINNER screw foundation		Tube diameter		Steel tube	Steel tube	Flange plate	Load values (tension in N/compression/horizontal)		
	Type desig. New version	Type desig. Old version	ø	Wall thickness	MRd, el kNm	MRd, pl kNm	MRd, el kNm	Compression (kN)	Tension (kN)	Horizontal (kN)
M-Series										
27		(KSF M24 140x2000)	139.70	3.60	11.140	15.980	3.97	72.50	40.00	19.50
	KSF M 140x2100-M24		139.70	3.60	△	△	△	△	△	△
28		(KSF M24 114x2000)	114.30	3.60	7.329	10.610	2.66	66.00	37.50	17.00
	KSF M 114x2100-M24		114.30	3.60	△	△	△	△	△	△
29		(KSF M24 114x1600)	114.30	3.60	7.329	10.610	2.66	47.50	27.50	13.50
	KSF M 114x1600-M24		114.30	3.60	△	△	△	△	△	△
30		(KSF M24 114x1200)	114.30	3.60	7.329	10.610	2.66	35.00	20.50	9.50
	KSF M 114x1300-M24		114.30	3.60	△	△	△	△	△	△
31		(KSF M24 90x2000)	88.90	3.60	4.314	6.220		55.00	35.00	14.00
	KSF M 89x2100-M24		88.90	3.60	△	△		△	△	△
32		(KSF M24 90x1600)	88.90	3.60	4.314	6.220		41.00	24.50	11.00
	KSF M 89x1600-M24		88.90	3.60	△	△		△	△	△
33		(KSF M24 90x1200)	88.90	3.60	4.314	6.220		30.00	16.50	7.50
	KSF M 89x1300-M24		88.90	3.60	△	△		△	△	△
34		(KSF M24 76x2000)	76.10	4.00	3.386	4.990		45.00	32.50	11.50
	KSF M 76x2100-M16		76.10	3.60	3.097	4.100		△	△	△
35		(KSF M24 76x1600)	76.10	4.00	3.386	4.990		35.00	21.50	8.50
	KSF M 76x1600-M16		76.10	3.60	3.097	4.100		△	△	△
36		(KSF M24 76x1200)	76.10	4.00	3.386	4.990		25.00	12.50	5.50
	KSF M 76x1300-M16		76.10	3.60	3.097	4.100		△	△	△
37		(KSF M12 76x1200)	76.10	2.00	1.834	2.640		18.50	11.50	5.50
	KSF M 76x1300-M12		76.10	2.60	2.328	3.065		△	△	△
38		(KSF M12 76x1000)	76.10	2.00	1.834	2.640		16.50	9.50	4.50
	KSF M 76x1000-M12		76.10	2.60	2.328	3.065		△	△	△
39		(KSF M12 76x800)	76.10	2.00	1.834	2.640		13.50	7.00	3.50
	KSF M 76x800-M12		76.10	2.60	2.328	3.065		△	△	△
U-Series										
40		(KSF U111x1000)	66.00	2.00	1.363			10.50	5.50	3.50
	KSF U 66x865-111		66.00	2.00	△			△	△	△
41		(KSF U91x1000)	66.00	2.00	1.363			10.50	5.50	3.50
	KSF U 66x865-91		66.00	2.00	△			△	△	△
42		(KSF U111x865)	66.00	2.00	1.363			6.00	4.50	2.50
	KSF U 66x730-111		66.00	2.00	△			△	△	△
43		(KSF U91x865)	66.00	2.00	1.363			6.00	4.50	2.50
	KSF U 66x730-91		66.00	2.00	△			△	△	△
44		(KSF U71x865)	66.00	2.00	1.363			6.00	4.50	2.50
	KSF U 66x730-71		66.00	2.00	△			△	△	△
45		(KSF U71x685)	66.00	2.00	1.363			2.50	1.70	0.50
	KSF U 66x550-71		66.00	2.00	△			△	△	△

*In the context of the former geotechnical standard DIN 1054, Nov. 1976 global safety factor approx. 2.0

Load tests on KRINNER Ground Screws according to DIN 18800 for measuring the external load bearing capacity, carried out in compliance with DIN EN 1537, DIN 4125 and DIN 1054

Example diagrams: Correlation of axial tensile force as a factor of foundation anchoring depth and extraction distance or axial shift for KRINNER Ground Screws.

WORK CURVE FOR AXIAL COMPRESSIVE LOAD TEST ON ALLUVIAL OR LOESS LOAM, SEMISOLID



WORK CURVE FOR AXIAL TENSILE LOAD TEST ON ALLUVIAL OR LOESS LOAM, SEMISOLID