

## MOUNTING INSTRUCTIONS

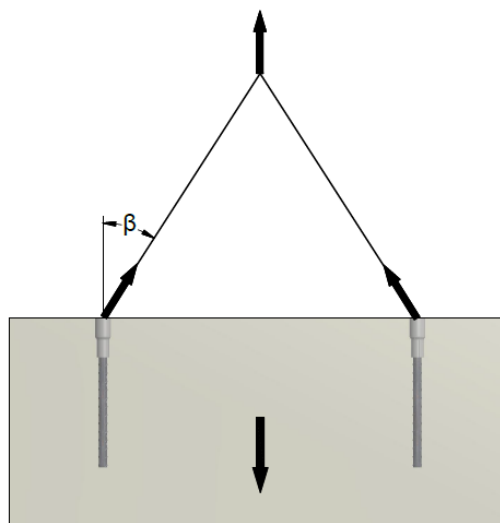
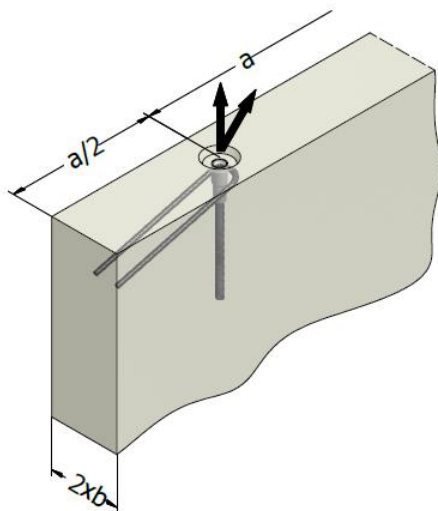


### **1D-HD - LIFTING SYSTEMS | TRL LIFTING SOCKET STRAIGHT END REINFORCING STEEL HEAVY DUTY**



## LIFTING AND TRANSPORT – TRL-HD ANCHORS

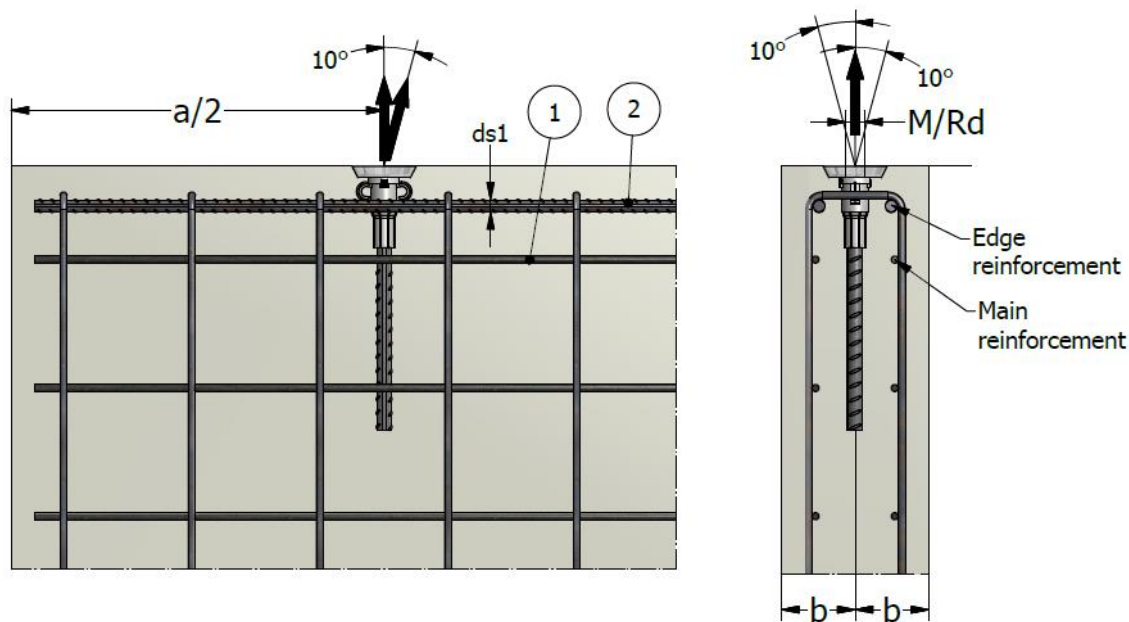
Edge distance and spacing for TRL-HD anchors.



TRL HD	Load group	Thread	a min	Minimum element thickness 2 x b	Axial load and diagonal load ≤30°			Axial load and diagonal load ≤ 45°			Transverse Load 90°		
	f <sub>cu</sub> > 15 MPa				15 MPa	25 MPa	35 MPa	15 MPa	25 MPa	35 MPa	15 MPa	25 MPa	35 MPa
	[t]				[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
TRL HD-M(Rd)12-300	1.3	12	620	60	13.0	13.0	13.0	10.5	13.0	13.0	3.5	4.5	5.3
				80	13.0	13.0	13.0	10.5	13.0	13.0	5.9	7.5	7.5
				100	13.0	13.0	13.0	10.5	13.0	13.0	7.5	7.5	7.5
TRL HD-M(Rd)16-400	2.5	16	820	80	25.0	25.0	25.0	18.9	25.0	25.0	4.2	5.4	6.3
				100	25.0	25.0	25.0	18.9	25.0	25.0	6.8	8.8	10.4
				120	25.0	25.0	25.0	18.9	25.0	25.0	9.9	12.7	14.0
TRL HD-M(Rd)20-520	4.0	20	980	120	38.2	40.0	40.0	31.8	40.0	40.0	8.9	11.5	13.6
				140	40.0	40.0	40.0	31.8	40.0	40.0	12.9	16.6	19.6
				160	40.0	40.0	40.0	31.8	40.0	40.0	17.5	22.5	23.0
TRL HD-M(Rd)24-540	5.0	24	1100	120	44.2	50.0	50.0	42.1	50.0	50.0	13.1	16.9	20.0
				140	47.1	50.0	50.0	42.1	50.0	50.0	14.7	19.0	22.5
				160	50.0	50.0	50.0	42.1	50.0	50.0	20.0	25.8	28.0
TRL HD-M(Rd)30-700	7.5	30	1420	140	70.0	75.0	75.0	67.7	75.0	75.0	18.1	23.4	27.7
				160	75.0	75.0	75.0	67.7	75.0	75.0	24.4	31.2	36.9
				180	75.0	75.0	75.0	67.7	75.0	75.0	31.1	40.1	42.5
TRL HD-M(Rd)36-800	10.0	36	1620	160	100.0	100.0	100.0	92.6	100.0	100.0	24.0	30.9	36.5
				180	100.0	100.0	100.0	92.6	100.0	100.0	30.5	39.4	46.6
				200	100.0	100.0	100.0	92.6	100.0	100.0	38.1	49.1	57.0
TRL HD-M(Rd)42-920	12.5	42	1870	160	125.0	125.0	125.0	120.2	125.0	125.0	26.3	33.9	40.1
				180	125.0	125.0	125.0	120.2	125.0	125.0	33.2	42.8	50.6
				200	125.0	125.0	125.0	120.2	125.0	125.0	40.1	51.7	61.2
TRL HD-M(Rd)52-1100	15.0	52	2230	200	150.0	150.0	150.0	144.8	150.0	150.0	36.2	46.7	55.2
				220	150.0	150.0	150.0	144.8	150.0	150.0	44.3	57.2	67.7
				240	150.0	150.0	150.0	144.8	150.0	150.0	53.0	68.5	81.0

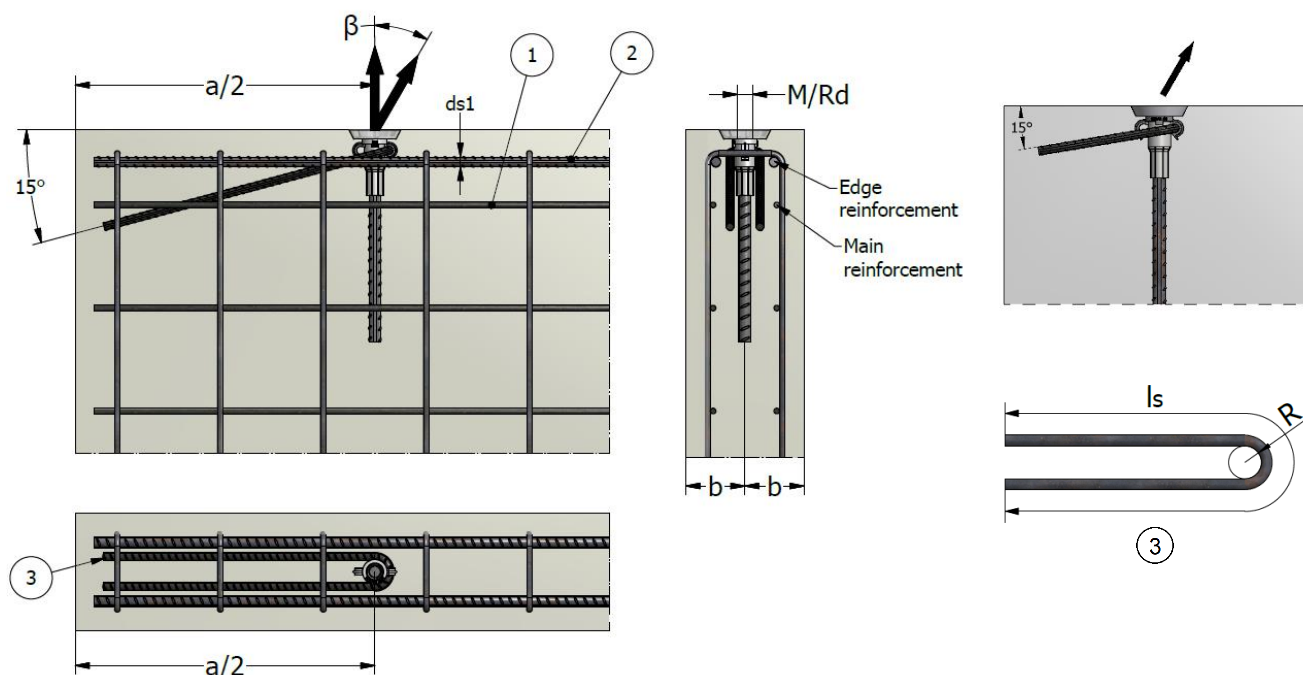
For using a cage or two layers of mesh, the dimensions indicated in the table above are available.


## REINFORCEMENT AND LOAD CAPACITY – AXIAL LOAD UP TO 10°

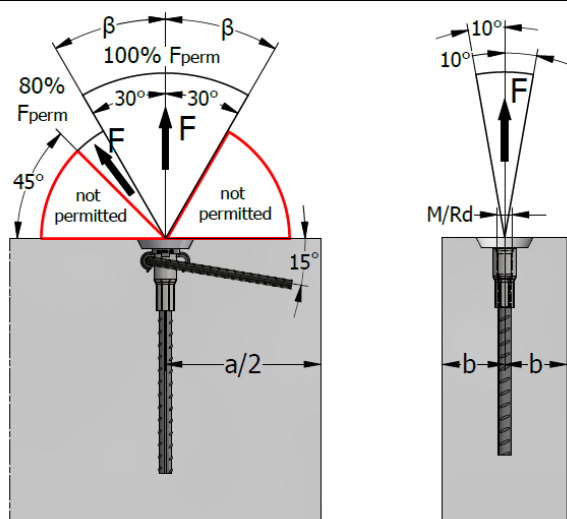


TRL HD-M(Rd)	Load group	Minimum unit thickness	Axial spacing	Mesh reinforcement ①	Edge reinforcement ②	Load capacity	
		$2 \times b$	$a$		$ds1$	$f_{cu} > 15 \text{ N/mm}^2$	$f_{cu} > 25 \text{ N/mm}^2$
	[t]	[mm]	[mm]	[mm <sup>2</sup> /m]	[mm]	[kN]	[kN]
M(Rd)12-300	1.3	60/80/100	620	$2 \times 188$	-	13	13
M(Rd)16-400	2.5	80/100/120	820	$2 \times 188$	-	25	25
M(Rd)20-520	4.0	120/140/160	980	$2 \times 188$	$2 \times \varnothing 12$	40	40
M(Rd)24-540	5.0	120/140/160	1100	$2 \times 188$	$2 \times \varnothing 12$	50	50
M(Rd)30-700	7.5	140/160/180	1420	$2 \times 188$	$2 \times \varnothing 14$	75	75
M(Rd)36-800	10.0	160/180/200	1620	$2 \times 188$	$2 \times \varnothing 14$	100	100
M(Rd)42-920	12.5	160/180/200	1870	$2 \times 188$	$2 \times \varnothing 14$	125	125
M(Rd)52-1100	15.0	200/220/240	2230	$2 \times 188$	$2 \times \varnothing 14$	150	150

## REINFORCEMENT AND LOAD CAPACITY – DIAGONAL LOAD UP TO 45°



TRL HD-M(Rd)	Load group	Minimum unit thickness	Axial spacing	Mesh reinforcement ①	Edge reinforcement ②	Diagonal reinforcement $\beta \leq 30^\circ$ ③		Diagonal reinforcement $\beta \leq 45^\circ$ ③		Load capacity 
		2 x b	a		d <sub>s1</sub>	d <sub>s</sub>	L <sub>s</sub>	d <sub>s</sub>	L <sub>s</sub>	f <sub>cu</sub> >15N/mm <sup>2</sup>
	[t]	[mm]	[mm]	[mm <sup>2</sup> /m]	[mm]	[mm]	[mm]	[mm]	[mm]	[kN]
M(Rd)12-300	1.3	60/80/100	620	2 x 188	-	Ø8	850	Ø8	1000	13
M(Rd)16-400	2.5	80/100/120	820	2 x 188	-	Ø8	1000	Ø10	1200	25
M(Rd)20-520	4.0	120/140/160	980	2 x 188	2 x Ø12	Ø10	1200	Ø12	1750	40
M(Rd)24-540	5.0	120/140/160	1100	2 x 188	2 x Ø12	Ø12	1750	Ø14	2000	50
M(Rd)30-700	7.5	140/160/180	1420	2 x 188	2 x Ø14	Ø14	1750	Ø16	2000	75
M(Rd)36-800	10.0	160/180/200	1620	2 x 188	2 x Ø14	Ø16	2000	Ø20	2050	100
M(Rd)42-920	12.5	160/180/200	1870	2 x 188	2 x Ø14	Ø20	2050	Ø20	2200	125
M(Rd)52-1100	15.0	200/220/240	2230	2 x 188	2 x Ø14	Ø20	2200	Ø25	2200	150



**Note:** The bend radius  $R$  will be determined according to EN 1992.

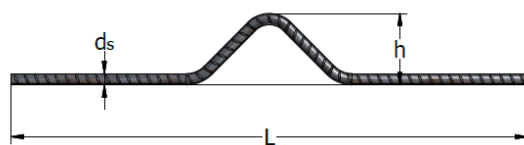
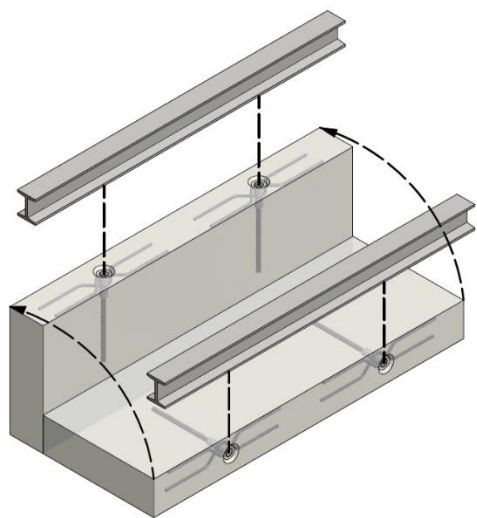
Diagonal reinforcement must be placed in direct contact with the socket anchor.

Always install diagonal reinforcement opposite the load direction.

The dimensions in the illustrations are in [mm].

## REINFORCEMENT AND LOAD CAPACITY – DIAGONAL LOAD AND TILTING UP TO 90°

For tilting and diagonal pull, additional reinforcements must be installed in the anchor zone. Make certain that the placement of the anchors ensures load transfer. When turning and lifting at an angle, tilt reinforcement is sufficient and there is no need for angle lift reinforcement.



Tilt reinforcement

TRL HD-M(Rd)	Load group	Thread	Overall length	Element thickness	Transverse reinforcement		
	$f_{cu} > 15 \text{ MPa}$				Dia. $d_s$	High $h$	Length before bending
	[t]	M(Rd)	[mm]	[mm]	[mm]	[mm]	[mm]
TRL HD-M(Rd)12-300	1.3	12	300	60	Ø8	23	550
				80	Ø8	33	550
				100	Ø8	43	550
TRL HD- M(Rd)16-400	2.5	16	400	80	Ø 12	37	750
				100	Ø 12	47	750
				120	Ø 12	57	750
TRL HD- M(Rd)20-520	4.0	20	520	120	Ø 16	62	910
				140	Ø 16	72	910
				160	Ø 16	82	910
TRL HD- M(Rd)24-540	5.0	24	540	120	Ø 16	66	1100
				140	Ø 16	76	1100
				160	Ø 16	86	1100
TRL HD- M(Rd)30-700	7.5	30	700	140	Ø 20	84	1300
				160	Ø 20	94	1300
				180	Ø 20	104	1300
TRL HD- M(Rd)36-800	10.0	36	800	160	Ø 20	98	1700
				180	Ø 20	108	1700
				200	Ø 20	118	1700
TRL HD- M(Rd)42-920	12.5	42	920	160	Ø 25	107	1650
				180	Ø 25	117	1650
				200	Ø 25	127	1650
TRL HD- M(Rd)52-1100	15.0	52	1100	200	Ø 25	133	1950
				220	Ø 25	143	1950
				240	Ø 25	153	1950

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