

R-LX-CS-ZF Zinc Flake coated Countersunk Concrete Screw Anchor

Self-tapping concrete screwbolt



Approvals and Reports

- ETA 17/0806



Product information

Features and benefits

- Time-efficient installation through streamlined procedure - simply drill and drive
- Completely removable with possibility of reuse
- Unique design with patented threadform ensures high performance for relatively small hole diameter and low torque level during installation even in high strength concrete
- Non-expansion functioning ensures low risk of damage to base material and makes R-LX ideal for installation near edges and adjacent anchors
- Highest performance in both cracked and non-cracked concrete
- Special zinc flake coating for increased corrosion resistance
- Different head types for any application
- Possibility of multiple use in high-strength concrete
- Allround product for any application

Applications

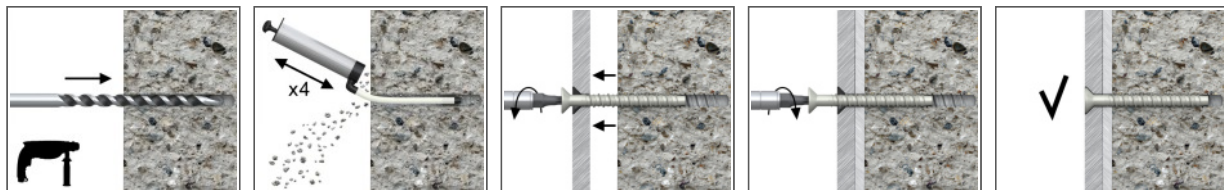
- Through-fixing
- Temporary anchorages
- Formwork support systems
- Balustrading & handrails
- Fencing & gates manufacturing and installation
- Racking systems
- Public seating
- Scaffolding

Base materials

Approved for use in:

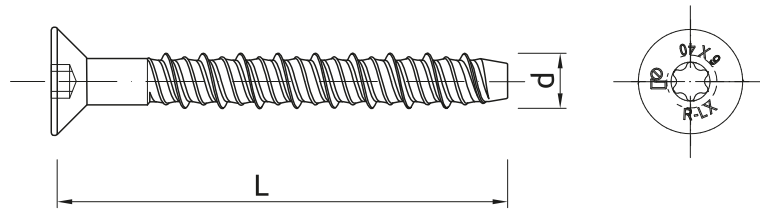
- Cracked concrete C20/25-C50/60
- Non-cracked concrete C20/25-C50/60
- Reinforced concrete
- Unreinforced concrete

Installation guide



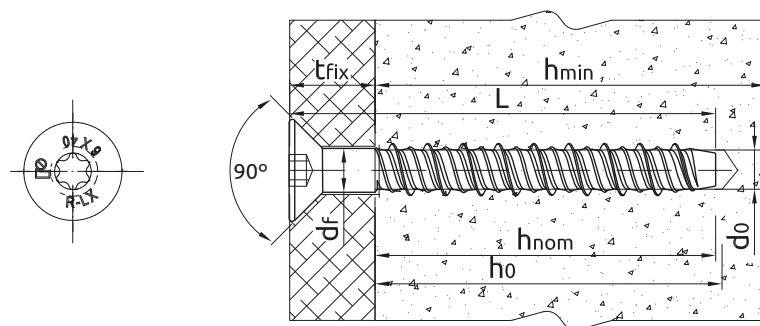
1. Drill the hole with rotary hammer drilling machine. Drill to a required depth.
2. Blow out dust at least 4 times with a hand pump.
3. Possibility of unscrewing and re-screwing.
4. Tighten to the recommended torque.
5. After installation.

Product information



Size	Product Code	Anchor		Fixture		
		Diameter	Length	Max. thickness t_{fix} for:		Hole diameter
		d	L	$h_{nom,red}$	$h_{nom,std}$	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
5	R-LX-05X050-CS-ZF	6.3	50	-	7	7
	R-LX-05X075-CS-ZF	6.3	75	-	32	7
6	R-LX-06X050-CS-ZF	7.5	50	7	-	9
	R-LX-06X075-CS-ZF	7.5	75	32	20	9
	R-LX-06X100-CS-ZF	7.5	100	57	45	9
	R-LX-06X130-CS-ZF	7.5	130	87	75	9
	R-LX-06X150-CS-ZF	7.5	150	107	95	9
	R-LX-06X160-CS-ZF	7.5	160	107	95	9
8	R-LX-08X060-CS-ZF	10	60	10	-	12
	R-LX-08X075-CS-ZF	10	75	25	5	12
	R-LX-08X090-CS-ZF	10	90	40	20	12
	R-LX-08X100-CS-ZF	10	100	50	30	12
	R-LX-08X130-CS-ZF	10	130	80	60	12
	R-LX-08X150-CS-ZF	10	150	100	80	12
10	R-LX-10X065-CS-ZF	12.5	65	10	-	14
	R-LX-10X075-CS-ZF	12.5	75	20	-	14
	R-LX-10X085-CS-ZF	12.5	85	30	-	14
	R-LX-10X100-CS-ZF	12.5	100	45	15	14
	R-LX-10X120-CS-ZF	12.5	120	65	35	14
	R-LX-10X140-CS-ZF	12.5	140	85	55	14
	R-LX-10X160-CS-ZF	12.5	160	105	75	14

Installation data



Size			5	6	8	10
Thread diameter	d	[mm]	6.3	7.5	10	12.5
Hole diameter in substrate	d_0	[mm]	5	6	8	10
Screw drive	-	[-]	T25	T30	T45	T50
Head diameter		[mm]	10.9	13.2	17.9	21.3
Max. torque for impact screw driver	$T_{imp,max}$	[Nm]	200	400	900	950

Installation data

Size			5	6	8	10
STANDARD EMBEDMENT DEPTH						
Min. hole depth in substrate	$h_{0,s}$	[mm]	50	65	80	95
Real hole depth in substrate	h_0	[mm]	$L + 10 - t_{fix}$	$L + 10 - t_{fix}$	$L + 10 - t_{fix}$	$L + 10 - t_{fix}$
Min. installation depth	$h_{nom,s}$	[mm]	43	55	70	85
Min. substrate thickness	$h_{min,s}$	[mm]	100	100	110	130
Min. spacing	$s_{min,s}$	[mm]	40	45	50	60
Min. edge distance	$c_{min,s}$	[mm]	40	45	50	60
REDUCED EMBEDMENT DEPTH						
Min. hole depth in substrate	$h_{0,r}$	[mm]	-	50	60	65
Real hole depth in substrate	h_0	[mm]	-	$L + 10 - t_{fix}$	$L + 10 - t_{fix}$	$L + 10 - t_{fix}$
Min. installation depth	$h_{nom,r}$	[mm]	-	43	50	55
Min. substrate thickness	$h_{min,r}$	[mm]	-	100	100	100
Min. spacing	$s_{min,r}$	[mm]	-	45	50	60
Min. edge distance	$c_{min,r}$	[mm]	-	45	50	60

Mechanical properties

Size			5	6	8	10
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm ²]	1300	1250	1200	1050
Nominal yield strength - tension	f_{yk}	[N/mm ²]	1150	1100	1050	950
Cross sectional area - tension	A_s	[mm ²]	19.6	28.3	50.3	78.5
Elastic section modulus	W_{el}	[mm ³]	12.2	21.2	50.3	98.1
Characteristic bending resistance	$M^b_{Rk,s}$	[Nm]	19	31.8	72.4	123.6
Design bending resistance	M	[Nm]	12.7	21.2	48.3	82.4

Basic performance data

Performance data for single anchor without influence of edge distance and spacing - ETAG 001

Size		5	6	8	10
NON-CRACKED CONCRETE C20/25					
Standard embedment depth h_{nom}	[mm]	43.00	55.00	70.00	85.00
Reduced embedment depth h_{nom}	[mm]	-	43.00	50.00	55.00
CRACKED CONCRETE C20/25					
Standard embedment depth h_{nom}	[mm]	43.00	55.00	70.00	85.00
Reduced embedment depth h_{nom}	[mm]	-	43.00	50.00	55.00
MEAN ULTIMATE LOAD					
TENSION LOAD $N_{Ru,m}$					
NON-CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	10.10	14.80	26.04	35.37
Reduced embedment depth	[kN]	-	11.09	15.19	17.08
CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	7.10	11.10	18.33	24.89
Reduced embedment depth	[kN]	-	7.81	10.69	12.02
SHEAR LOAD $V_{Ru,m}$					
NON-CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	10.10	14.80	26.04	49.46
Reduced embedment depth	[kN]	-	11.09	15.19	17.08
CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	7.10	11.10	18.33	49.46
Reduced embedment depth	[kN]	-	7.81	10.69	12.02

Basic performance data

Size		5	6	8	10
CHARACTERISTIC LOAD					
TENSION LOAD N_{Rk}					
NON-CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	7.00	12.00	19.49	26.46
Reduced embedment depth	[kN]	-	9.14	10.91	12.78
CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	4.50	7.00	13.00	18.87
Reduced embedment depth	[kN]	-	6.52	7.50	8.00
SHEAR LOAD V_{Rk}					
NON-CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	9.14	13.75	19.49	41.20
Reduced embedment depth	[kN]	-	9.14	10.91	12.78
CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	6.52	9.80	13.89	37.73
Reduced embedment depth	[kN]	-	6.52	7.78	9.11
DESIGN LOAD					
TENSION LOAD N_{Rd}					
NON-CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	3.89	8.00	12.99	17.64
Reduced embedment depth	[kN]	-	6.09	7.27	8.52
CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	2.50	4.67	8.67	12.58
Reduced embedment depth	[kN]	-	4.34	5.00	5.33
SHEAR LOAD V_{Rd}					
NON-CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	6.09	9.16	12.99	27.47
Reduced embedment depth	[kN]	-	6.09	7.27	8.52
CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	4.34	6.53	9.26	25.15
Reduced embedment depth	[kN]	-	4.34	5.18	6.07

Design performance data

Standard embedment depth

(-) failure is not decisive

Size			5	6	8	10
Min. installation depth	h_{nom}	[mm]	43.00	55.00	70.00	85.00
Effective embedment depth	h_{ef}	[mm]	32.00	42.00	53.00	65.00
TENSION LOAD						
STEEL FAILURE						
Characteristic resistance	$N_{Rk,s}$	[kN]	25.50	35.40	60.40	82.40
Partial safety factor	γ_{Ms}	-	1.40	1.40	1.40	1.40
PULL-OUT FAILURE; NON-CRACKED CONCRETE C20/25						
Characteristic resistance	$N_{Rk,p}$	[kN]	7.00	12.00	-	-
PULL-OUT FAILURE; CRACKED CONCRETE C20/25						
Characteristic resistance	$N_{Rk,p}$	[kN]	4.50	7.00	13.00	-
PULL-OUT FAILURE						
Installation safety factor	γ_2	-	1.20	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C30/37	ψ_c	-	1.08	1.08	1.08	1.08
Increasing factors for $N_{Rd,p}$ - C40/50	ψ_c	-	1.15	1.15	1.15	1.15
Increasing factors for $N_{Rd,p}$ - C50/60	ψ_c	-	1.19	1.19	1.19	1.19
CONCRETE CONE FAILURE						
Installation safety factor	γ_2	-	1.20	1.00	1.00	1.00
Factor for cracked concrete	k	-	7.20	7.20	7.20	7.20
Factor for cracked concrete	$k_{cr,N}$	-	7.70	7.70	7.70	7.70
Factor for non-cracked concrete	k	-	10.10	10.10	10.10	10.10
Factor for non-cracked concrete	$k_{ucr,N}$	-	11.00	11.00	11.00	11.00
Spacing	$s_{cr,N}$	[mm]	90.00	126.00	160.00	196.00
Edge distance	$c_{cr,N}$	[mm]	45.00	63.00	80.00	98.00
CONCRETE SPLITTING FAILURE						
Installation safety factor	γ_2	-	1.20	1.00	1.00	1.00
Spacing	$s_{cr,sp}$	[mm]	90.00	126.00	160.00	222.00
Edge distance	$c_{cr,sp}$	[mm]	45.00	63.00	80.00	111.00
SHEAR LOAD						
STEEL FAILURE						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	12.70	17.70	30.20	41.20
Ductility factor	k_γ	-	0.80	0.80	0.80	0.80
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	19.00	31.80	72.40	123.60
Partial safety factor	γ_{Ms}	-	1.50	1.50	1.50	1.50
CONCRETE PRY-OUT FAILURE						
Factor	k	-	1.00	1.00	1.00	2.00
Installation safety factor	γ_2	-	1.00	1.00	1.00	1.00
CONCRETE EDGE FAILURE						
Effective length of anchor	ℓ_f	[mm]	43.00	55.00	70.00	85.00
Anchor diameter	d_{nom}	[mm]	5.00	6.00	8.00	10.00
Installation safety factor	γ_2	-	1.00	1.00	1.00	1.00

Design performance data

Characteristic Resistance under fire exposure in concrete C20/25 to C50/60

Size				5	6	8	10
TENSION LOAD							
Edge distance	c_{cr}	[mm]		64.00	84.00	106.00	130.00
Spacing	s_{cr}	[mm]		128.00	168.00	212.00	260.00
R (for EI) = 30 min							
TENSION LOAD							
STEEL FAILURE							
Characteristic resistance	$N_{Rk,s}$	[kN]		0.20	0.28	0.75	1.57
PULL-OUT FAILURE							
Characteristic resistance	$N_{Rk,p}$	[kN]		1.13	1.75	3.25	4.75
SHEAR LOAD							
STEEL FAILURE							
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]		0.20	0.28	0.75	1.57
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]		0.15	0.25	0.90	2.36
R (for EI) = 60 min							
TENSION LOAD							
STEEL FAILURE							
Characteristic resistance	$N_{Rk,s}$	[kN]		0.18	0.25	0.65	1.18
PULL-OUT FAILURE							
Characteristic resistance	$N_{Rk,p}$	[kN]		1.13	1.75	3.25	4.75
SHEAR LOAD							
STEEL FAILURE							
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]		0.18	0.25	0.65	1.18
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]		0.13	0.23	0.78	1.77
R (for EI) = 90 min							
TENSION LOAD							
STEEL FAILURE							
Characteristic resistance	$N_{Rk,s}$	[kN]		0.14	0.20	0.50	1.02
PULL-OUT FAILURE							
Characteristic resistance	$N_{Rk,p}$	[kN]		1.13	1.75	3.25	4.75
SHEAR LOAD							
STEEL FAILURE							
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]		0.14	0.20	0.50	1.02
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]		0.10	0.18	0.60	1.53
R (for EI) = 120 min							
TENSION LOAD							
STEEL FAILURE							
Characteristic resistance	$N_{Rk,s}$	[kN]		0.10	0.14	0.40	0.79
PULL-OUT FAILURE							
Characteristic resistance	$N_{Rk,p}$	[kN]		0.90	1.40	2.60	3.80
SHEAR LOAD							
STEEL FAILURE							
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]		0.10	0.14	0.40	0.79
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]		0.07	0.13	0.48	1.18

Design performance data

Allowable values for resistance in case of Seismic performance category C1 - Standard embedment depth

Size			8	10
Effective embedment depth	h_{ef}	[mm]	53.00	65.00
TENSION LOAD, STEEL FAILURE				
Characteristic resistance	$N_{Rk,s}$	[kN]	60.40	82.40
Partial safety factor	$\gamma_{MsN,seisC1}$	-	1.40	
TENSION LOAD, PULL-OUT FAILURE				
Characteristic resistance	$N_{Rk,p}$	[kN]	5.40	13.50
Partial safety factor	$\gamma_{Mp,seisC1}$	-	1.50	
SHEAR LOAD, STEEL FAILURE				
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	15.10	27.40
Partial safety factor	$\gamma_{MsV,seisC1}$	-	1.50	

Allowable values for resistance in case of Seismic performance category C2 - Standard embedment depth

Size			8	10
Effective embedment depth	h_{ef}	[mm]	53.00	65.00
TENSION LOAD, STEEL FAILURE				
Characteristic resistance	$N_{Rk,s}$	[kN]	60.40	82.40
Partial safety factor	$\gamma_{MsN,seisC2}$	-	1.40	
TENSION LOAD, PULL-OUT FAILURE				
Characteristic resistance	$N_{Rk,p}$	[kN]	1.57	4.91
Partial safety factor	$\gamma_{Mp,seisC2}$	-	1.50	
SHEAR LOAD, STEEL FAILURE				
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	9.90	20.60
Partial safety factor	$\gamma_{MsV,seisC2}$	-	1.50	

Design performance data

Reduced embedment depth

(-) failure is not decisive

Size			5	6	8	10
Min. installation depth	h_{nom}	[mm]	-	43.00	50.00	55.00
Effective embedment depth	h_{ef}	[mm]	-	32.00	36.00	40.00
TENSION LOAD						
STEEL FAILURE						
Characteristic resistance	$N_{Rk,s}$	[kN]	-	35.40	60.40	82.40
Partial safety factor	γ_{Ms}	-	-	1.40	1.40	1.40
PULL-OUT FAILURE; NON-CRACKED CONCRETE C20/25						
Characteristic resistance	$N_{Rk,p}$	[kN]	-	-	-	-
PULL-OUT FAILURE; CRACKED CONCRETE C20/25						
Characteristic resistance	$N_{Rk,p}$	[kN]	-	-	7.50	8.00
PULL-OUT FAILURE						
Installation safety factor	γ_2	-	-	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C30/37	ψ_c	-	-	1.08	1.08	1.08
Increasing factors for $N_{Rd,p}$ - C40/50	ψ_c	-	-	1.15	1.15	1.15
Increasing factors for $N_{Rd,p}$ - C50/60	ψ_c	-	-	1.19	1.19	1.19
CONCRETE CONE FAILURE						
Installation safety factor	γ_2	-	-	1.00	1.00	1.00
Factor for cracked concrete	k	-	-	7.20	7.20	7.20
Factor for cracked concrete	$k_{cr,N}$	-	-	7.70	7.70	7.70
Factor for non-cracked concrete	k	-	-	10.10	10.10	10.10
Factor for non-cracked concrete	$k_{ucr,N}$	-	-	11.00	11.00	11.00
Spacing	$s_{cr,N}$	[mm]	-	90.00	112.00	120.00
Edge distance	$c_{cr,N}$	[mm]	-	45.00	56.00	60.00
CONCRETE SPLITTING FAILURE						
Installation safety factor	γ_2	-	-	1.00	1.00	1.00
Spacing	$s_{cr,sp}$	[mm]	-	90.00	112.00	136.00
Edge distance	$c_{cr,sp}$	[mm]	-	45.00	56.00	68.00
SHEAR LOAD						
STEEL FAILURE						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	17.70	30.20	41.20
Ductility factor	k_γ	-	-	0.80	0.80	0.80
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	31.80	72.40	123.60
Partial safety factor	γ_{Ms}	-	-	1.50	1.50	1.50
CONCRETE PRY-OUT FAILURE						
Factor	k	-	-	1.00	1.00	1.00
Installation safety factor	γ_2	-	-	1.00	1.00	1.00
CONCRETE EDGE FAILURE						
Effective length of anchor	ℓ_f	[mm]	-	43.00	50.00	55.00
Anchor diameter	d_{nom}	[mm]	-	6.00	8.00	10.00
Installation safety factor	γ_2	-	-	1.00	1.00	1.00

Design performance data

Characteristic Resistance under fire exposure in concrete C20/25 to C50/60

Size			5	6	8	10
TENSION LOAD						
Edge distance	c_{cr}	[mm]	-	64.00	72.00	80.00
Spacing	s_{cr}	[mm]	-	128.00	144.00	160.00
R (for EI) = 30 min						
TENSION LOAD						
STEEL FAILURE						
Characteristic resistance	$N_{Rk,s}$	[kN]	-	0.28	0.75	1.57
PULL-OUT FAILURE						
Characteristic resistance	$N_{Rk,p}$	[kN]	-	1.38	1.88	2.00
SHEAR LOAD						
STEEL FAILURE						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	0.28	0.75	1.57
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	0.25	0.90	2.36
R (for EI) = 60 min						
TENSION LOAD						
STEEL FAILURE						
Characteristic resistance	$N_{Rk,s}$	[kN]	-	0.25	0.65	1.18
PULL-OUT FAILURE						
Characteristic resistance	$N_{Rk,p}$	[kN]	-	1.38	1.88	2.00
SHEAR LOAD						
STEEL FAILURE						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	0.25	0.65	1.18
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	0.23	0.78	1.77
R (for EI) = 90 min						
TENSION LOAD						
STEEL FAILURE						
Characteristic resistance	$N_{Rk,s}$	[kN]	-	0.20	0.50	1.02
PULL-OUT FAILURE						
Characteristic resistance	$N_{Rk,p}$	[kN]	-	1.38	1.88	2.00
SHEAR LOAD						
STEEL FAILURE						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	0.20	0.50	1.02
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	0.18	0.60	1.53
R (for EI) = 120 min						
TENSION LOAD						
STEEL FAILURE						
Characteristic resistance	$N_{Rk,s}$	[kN]	-	0.14	0.40	0.79
PULL-OUT FAILURE						
Characteristic resistance	$N_{Rk,p}$	[kN]	-	1.10	1.50	1.60
SHEAR LOAD						
STEEL FAILURE						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	0.14	0.40	0.79
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	0.13	0.48	1.18

Product commercial data

Product Code	Anchor	Quantity [pcs]			Weight [kg]			Bar Codes
	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
R-LX-05X050-CS-ZF ₁₎	50	100	100	41600	0.82	0.82	369.9	5906675130217
R-LX-05X075-CS-ZF ₁₎	75	100	100	41600	1.19	1.19	525.0	5906675130224
R-LX-06X050-CS-ZF ₁₎	50	100	100	41600	1.29	1.29	564.6	5906675130231
R-LX-06X075-CS-ZF ₁₎	75	100	100	41600	1.76	1.76	762.2	5906675130248
R-LX-06X100-CS-ZF ₁₎	100	100	100	25600	2.3	2.3	618.8	5906675130255
R-LX-06X130-CS-ZF ₁₎	130	100	100	25600	3.0	3.0	785.2	5906675130262
R-LX-06X150-CS-ZF ₁₎	150	100	100	25600	3.4	3.4	897.8	5906675130279
R-LX-08X060-CS-ZF ₁₎	60	100	100	25600	2.6	2.6	700.7	5906675130385
R-LX-08X075-CS-ZF ₁₎	75	100	100	25600	3.2	3.2	849.2	5906675130392
R-LX-08X090-CS-ZF ₁₎	90	100	100	19200	3.8	3.8	757.7	5906675130408
R-LX-08X100-CS-ZF ₁₎	100	100	100	19200	4.2	4.2	830.6	5906675130415
R-LX-08X130-CS-ZF ₁₎	130	50	50	12800	2.7	2.7	712.2	5906675130422
R-LX-08X150-CS-ZF ₁₎	150	50	50	12800	3.1	3.1	812.1	5906675130439
R-LX-10X065-CS-ZF ₁₎	65	50	50	15600	2.2	2.2	725.8	5906675130453
R-LX-10X075-CS-ZF ₁₎	75	50	50	12800	2.5	2.5	679.0	5906675130460
R-LX-10X085-CS-ZF ₁₎	85	50	50	12800	2.8	2.8	757.0	5906675130477
R-LX-10X100-CS-ZF ₁₎	100	50	50	12800	3.3	3.3	873.5	5906675130491
R-LX-10X120-CS-ZF ₁₎	120	25	25	6400	2.0	2.0	529.8	5906675130514
R-LX-10X140-CS-ZF ₁₎	140	25	25	7800	2.3	2.3	734.3	5906675130521
R-LX-10X160-CS-ZF ₁₎	160	20	20	6240	2.1	2.1	669.6	5906675130538

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