



CROSBY KUPLEX®

SETTING THE
STANDARD IN
CHAIN LIFTING
SYSTEMS

KUPLEX 8 + 10

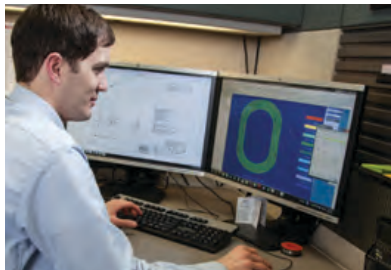
KUPLEX 8 + 10

DUAL GRADE SYSTEM

Crosby KUPLEX 8+10 is a unique dual grade chain sling system. Advanced technical design, with precise material and heat treatment selection, has enhanced the high wear and fatigue properties for which Crosby KUPLEX is renowned throughout the world.

Crosby KUPLEX 8+10 dual rated components can now be combined with either Crosby KUPLEX Grade 8 or Grade 10 chain for the most versatile system ever produced (see dual load chart on page 441).

A range of components is available from 7mm up to 32mm allowing a wide variety of slings to be supplied with load ratings up to 85 tonnes.



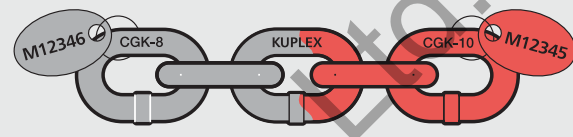
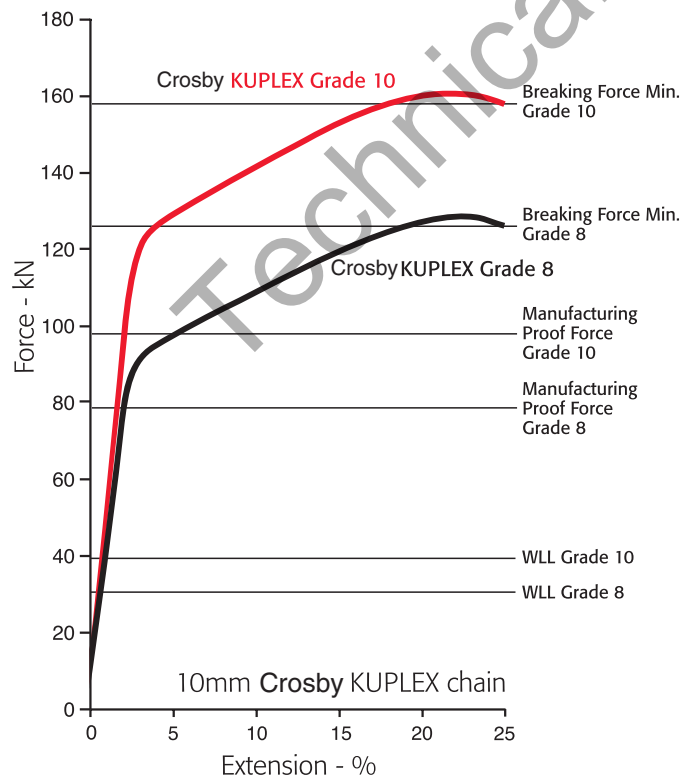
Crosby KUPLEX 8+10 components have been designed using the latest CAD facilities which allows for a full stress analysis of each component prior to manufacture.



Crosby KUPLEX 8+10 components are subjected to non-destructive testing giving the user complete peace of mind.

Crosby KUPLEX Grade 8 and Grade 10 chains are subjected to non-destructive tests, calibration and visual inspection.

Crosby KUPLEX 8+10 components and KUPLEX Grade 10 chain are 25% stronger than existing Grade 8 components and chain.



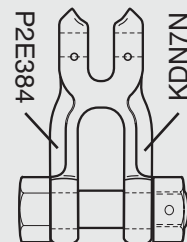
The Crosby KUPLEX chain batch number is marked on the box and on a metal tag attached to the end of the chain. All Crosby KUPLEX chain is either double embossed with Crosby KUPLEX one side and the Grade 8 or 10 on the other, or single embossed with CGK8 to denote Crosby KUPLEX Grade 8 or CGK10 to denote Crosby KUPLEX Grade 10, every 20th link or 1 meter, whichever is the lesser distance.

Crosby KUPLEX components are marked with part numbers and traceability codes.

Brand Name and Dual Grade
Crosby KUPLEX

8+10

Part Number	KDN7N
Manufacturer	P
Die Run Number	2
Year of Manufacture	E
Steel Cast Number	384
Grouped together as	P2E384
Origin	UK



Crosby can provide certified material (mill) analysis for each production lot, traceable by the Product Identification Code (PIC).

The Crosby KUPLEX 8+10 system is certified to European and International requirements making it a worldwide system.



KUPLEX 8 + 10

WORKING LOAD LIMITS - TONNES

The working load limits (WLL) listed in the table below are the maximum weights which slings are designed to carry in general lifting service according to the standard uniform load method of rating.

In exceptionally hazardous conditions or in any other circumstances which might indicate a need for a WLL lower than the designed figure, the degree of hazard should be assessed by a competent person and the working load limit adjusted accordingly. The WLL, which should be marked on the sling itself, or on a securely fixed metal tag, must not be exceeded in any circumstances.

Chain Dia. mm	Grade	90°		β		β		Endless
		Single Leg	Two Leg		Three and Four Leg			
			Factor 1	0° < β ≤ 45°	45° < β ≤ 60°	0° < β ≤ 45°	45° < β ≤ 60°	
7	8	1.5	2.12	1.5	3.15	2.24	2.5	
7	10	2	2.8	2	4.2	3	3.2	
8	8	2	2.8	2	4.2	3	3.2	
10	8	3.15	4.25	3.15	6.7	4.75	5	
10	10	4.0	5.6	4	8.4	6	6.4	
13	8	5.3	7.5	5.3	11.2	8	8.5	
13	10	6.7	9.5	6.7	14	10	10.7	
16	8	8	11.2	8	17	11.8	12.5	
16	10	10	14	10	21.2	15	16	
19	8	11.2	16	11.2	23.6	17	18	
19	10	14	20	14	30	21	22.4	
23	8	16	23.6	16	35.5	25	26.5	
23	10	21	29.5	21	44	31.5	33.5	
26	8	21.2	30	21.2	45	31.5	33.5	
26	10	27	38	27	57	40	43	
32	8	31.5	45	31.5	67	47.5	50	
32	10	40	56	40	85	60	65	

CROSBY KUPLEX Grade 8 working load limits are in accordance with EN 818-4



NOTE: Never exceed the working load limit marked on the sling. Never use a sling at angles greater than 60° from the vertical.

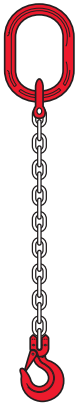
The load imposed on a sling leg increases as the angle of the leg from vertical increases

Account is taken of this fact when calculating working load limits. For example, a 10mm two-leg sling to be used at angle of 45° from the vertical (90° included angle) will have a WLL 1.4 times that of a 10mm single leg sling when used vertical, and not 2 times the single leg. That same working load limit applies to all angles from 0° -45° (0° -90° included angle.) Where there is likely to be a need to use a sling at an angle greater than 45° from the vertical, the sling should have additional markings showing the reduced WLL applying at angles from 45° -60° from the vertical (included angles from 90° -120°). Refer to 'Restrictions on the Angles of Use' on page 459.

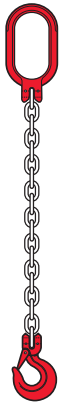
Alternative Method of Rating

An alternative method of rating may be used for specific lifting applications where the angle at which the sling's legs are disposed is predetermined. This method allows greater working load limits at angles less than 45° from the vertical, always assuming that the sling legs are disposed symmetrically with each leg accepting an equal share of the load to be lifted. For further details refer to your Crosby KUPLEX distributor.

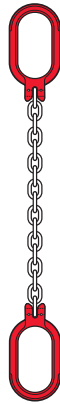
Single Leg Slings



Single Leg fitted with KHN L Sling Hooks



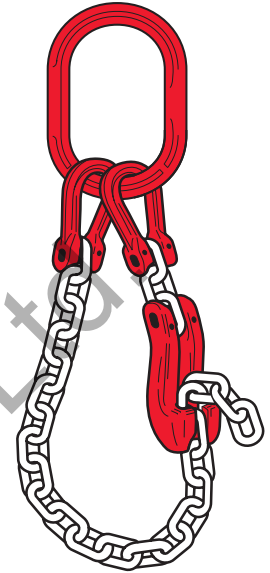
Single Leg fitted with KS N Kuplink and KHN L Sling Hooks



Single Leg fitted with KS N Kuplinks each end



Single Leg fitted with KSS N Reeveable Link each end



KSC Shortening Clutch in use

Basket configuration

Master Links



KM
7mm - 32mm



KSS N
7mm - 26mm



KS N
7mm - 16mm

Kupler



K N
7mm - 32mm

Shortening Clutch



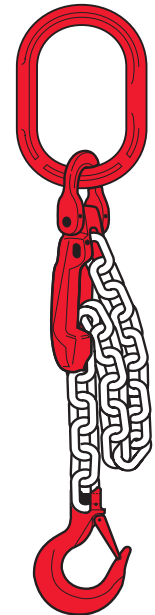
KSC N
7mm - 19mm



KSC
7mm - 32mm

Terminal Fittings - Availability Chart

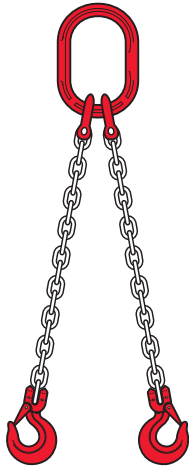
Chain Dia. (mm)	Grade	Working Load Limit (t)											
7	8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7	10	2	2	2	2	2	2	2	2	2	2	2	-
8	8	2	2	2	2	2	2	2	2	2	2	2	2
10	8	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
10	10	4	4	4	4	4	4	4	4	4	4	4	-
13	8	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
13	10	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	-
16	8	8	8	8	-	8	8	8	8	8	8	8	8
16	10	10	10	10	-	10	10	10	10	10	10	10	-
19	8	11.2	-	11.2	-	11.2	11.2	-	-	11.2	11.2	-	11.2
19	10	14	-	14	-	14	14	-	-	14	14	-	-
23	8	16	-	16	-	-	16	-	-	-	16	-	16
23	10	21	-	21	-	-	21	-	-	-	21	-	-
26	8	21.2	-	-	-	-	-	-	-	-	21.2	-	21.2
26	10	27	-	-	-	-	-	-	-	-	27	-	-
32	8	31.5	-	-	-	-	-	-	-	-	-	-	31.5
32	10	40	-	-	-	-	-	-	-	-	-	-	-



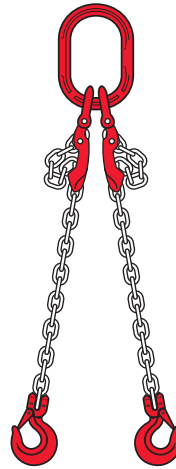
KSC N Shortening Clutch in use

Note that the loaded end of the chain must come out of the bottom of both types of clutch.

Two Leg Slings



Two Leg fitted with KHN L sling hooks



Two Leg fitted with KSCN Shortening Clutches and KHN L sling hooks

Master Links



KM
7mm - 32mm

Kupler



KN
7mm - 32mm

Shortening Clutch



KSCN
7mm - 19mm



KSC
7mm - 32mm

Terminal Fittings - Availability Chart

Chain Dia. (mm)	Grade	Working Load Limit (t.)											
7	8	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12
7	10	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	-
8	8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
10	8	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
10	10	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	-
13	8	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
13	10	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	-
16	8	11.2	11.2	11.2	-	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
16	10	14	14	14	-	14	14	14	14	14	14	14	-
19	8	16	-	16	-	16	16	-	-	16	16	-	16
19	10	20	-	20	-	20	20	-	-	20	20	-	-
23	8	23.6	-	23.6	-	-	23.6	-	-	-	23.6	-	23.6
23	10	29.5	-	29.5	-	-	29.5	-	-	-	29.5	-	-
26	8	30	-	-	-	-	-	-	-	-	30	-	30
26	10	38	-	-	-	-	-	-	-	-	38	-	-
32	8	45	-	-	-	-	-	-	-	-	-	-	45
32	10	56	-	-	-	-	-	-	-	-	-	-	-

Working Load Limits are for Two Leg Slings at 0° to 45°

KUPLEX
DUAL GRADE SYSTEM
+10

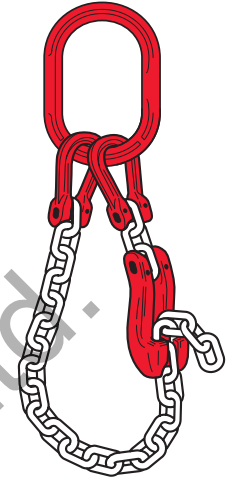
Three Leg Slings



Three Leg fitted with KHN L Sling Hooks



Three Leg fitted with KSCN Shortening Clutches and KHN L Sling Hooks



KSC Shortening Clutch in use. Basket configuration

Master Links



KMM L
7mm - 32mm



KM
7mm - 32mm



KAL
7mm - 19mm

Kupler



K N
7mm - 32mm

Shortening Clutch



KSC N
7mm - 19mm



KSC
7mm - 32mm



KSC N Shortening Clutch in use

Terminal Fittings - Availability Chart

Chain Dia. (mm)	Grade	Working Load Limit (t)											
7	8	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
7	10	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	-
8	8	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
10	8	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
10	10	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	-
13	8	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
13	10	14	14	14	14	14	14	14	14	14	14	14	-
16	8	17	17	17	-	17	17	17	17	17	17	17	17
16	10	21.2	21.2	21.2	-	21.2	21.2	21.2	21.2	21.2	21.2	21.2	-
19	8	23.6	-	23.6	-	23.6	23.6	-	-	23.6	23.6	-	23.6
19	10	30	-	30	-	30	30	-	-	30	30	-	-
23	8	35.5	-	35.5	-	-	35.5	-	-	-	35.5	-	35.5
23	10	44	-	44	-	-	44	-	-	-	44	-	-
26	8	45	-	-	-	-	-	-	-	-	45	-	45
26	10	57	-	-	-	-	-	-	-	-	57	-	-
32	8	67	-	-	-	-	-	-	-	-	-	-	67
32	10	85	-	-	-	-	-	-	-	-	-	-	-

Note that the loaded end of the chain must come out of the bottom of both types of clutch.

Working Load Limits are for Three Leg Slings at 0° to 45°

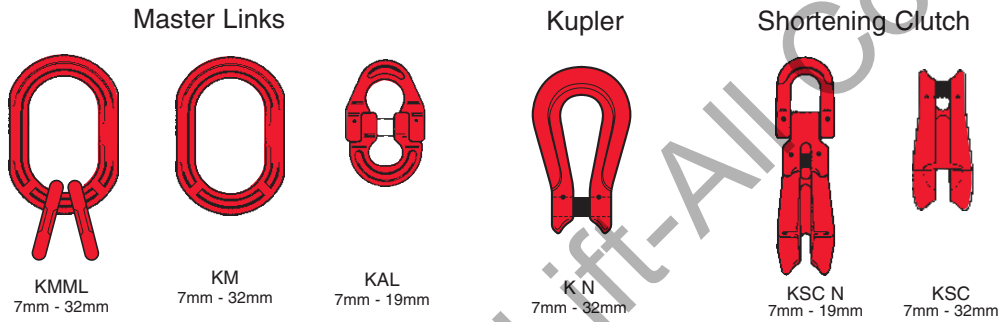
Four Leg Slings



Four Leg fitted with KHN L Sling Hooks



Four Leg fitted with KSC-N Shortening Clutches and KHN L Sling Hooks



Terminal Fittings - Availability Chart

Chain Dia. (mm)	Grade	Working Load Limit (t)											
7	8	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
7	10	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	-
8	8	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
10	8	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
10	10	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	-
13	8	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
13	10	14	14	14	14	14	14	14	14	14	14	14	-
16	8	17	17	17	-	17	17	17	17	17	17	17	17
16	10	21.2	21.2	21.2	-	21.2	21.2	21.2	21.2	21.2	21.2	21.2	-
19	8	23.6	-	23.6	-	23.6	23.6	-	-	23.6	23.6	-	23.6
19	10	30	-	30	-	30	30	-	-	30	30	-	-
23	8	35.5	-	35.5	-	-	35.5	-	-	-	35.5	-	35.5
23	10	44	-	44	-	-	44	-	-	-	44	-	-
26	8	45	-	-	-	-	-	-	-	-	45	-	45
26	10	57	-	-	-	-	-	-	-	-	57	-	-
32	8	67	-	-	-	-	-	-	-	-	-	-	67
32	10	85	-	-	-	-	-	-	-	-	-	-	-

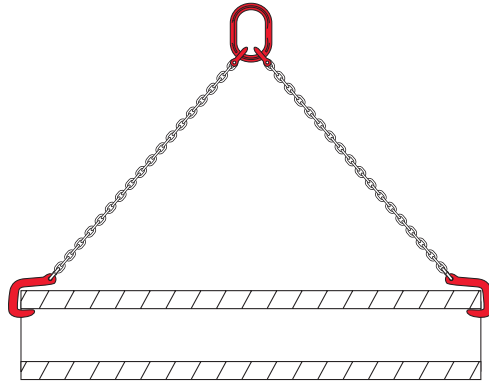
Working Load Limits are for Three Leg Slings at 0° to 45°

KUPLEX®
 DUAL GRADE SYSTEM
 +10
 8

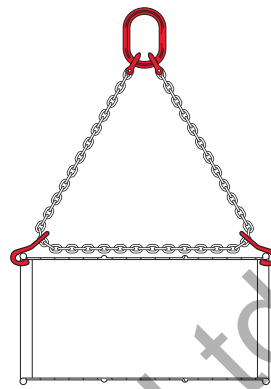
Special Purpose Slings



Two-leg Basket Sling



Pipe Sling



Drum Sling

Master Links



KMML
7mm - 32mm



KM
7mm - 32mm



KAL
7mm - 19mm

Kupler



KN
7mm - 32mm

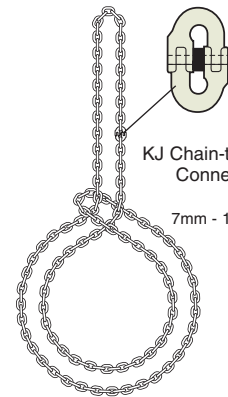
Shortening Clutch



KSCN
7mm - 19mm









KSC
7mm - 32mm



KJ Chain-to-Chain
Connector

7mm - 19mm

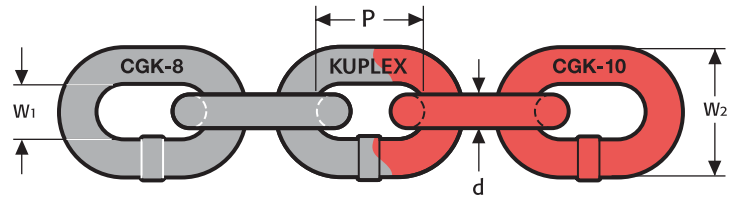
Terminal Fittings - Availability Chart

Chain Dia. (mm)	Grade	Working Load Limit (t)						
		 KPH10 USED IN PAIRS	 KD USED IN PAIRS	 KB		 SINGLE BASKET	 ENDLESS DOUBLE BASKET	 IN CHOKE
7	8	-	1.5	1.5	2.12	2.12	3.15	2.5
7	10	-	2.0	2.0	2.8	2.8	4.2	-
8	8	-	2.0	2.0	2.8	2.8	4.2	3.2
10	8	4.25	-	-	-	4.25	6.7	5
10	10	5.6	-	-	-	5.6	8.4	-
13	8	Note: Sling rated at minimum 30° from the vertical (60° included angle) MUST BE USED IN PAIRS	Note: Sling rated at minimum 30° from the vertical (60° included angle) MUST BE USED IN PAIRS	-	-	7.5	11.2	8.5
13	10			-	-	9.5	14	-
16	8			-	-	11.2	17	12.5
16	10			-	-	14	21.2	-
19	8			-	-	16	23.6	18
19	10			-	-	20	30	-
23	8			-	-	23.6	35.5	-
23	10			-	-	29.5	44	-
26	8			-	-	30	45	-
26	10			-	-	38	57	-
32	8	-	-	45	67	-		
32	10	-	-	56	85	-		

Working Load Limits are for slings as illustrated.

Technical Details

All Crosby KUPLEX chain meets the dimensional requirements of BS EN 818-2 and ISO 3076. All Crosby KUPLEX chain is either double embossed with Crosby KUPLEX one side and the Grade 8 or 10 on the other, or single embossed with CGK-8 to denote Crosby KUPLEX Grade 8 or CGK-10 to denote Crosby KUPLEX Grade 10, every 20th link or 1 meter, whichever is the lesser distance.



Dimensions and Weights

Nominal Size (d) Diameter mm	Crosby Stock No.	Grade	Nominal Pitch (p) mm	Maximum External Width (W ₂) mm	Minimum Internal Width (W ₁) mm	Approx. Weight kg/m	Meters / drum
7	1245125	8	21	25.9	9.1	1.09	200
	1210097	10					
8	1245055	8	24	29.62	10.4	1.4	200
	1245125	8					
10	1210097	10	30	37	13	2.2	200
	1245195	8					
13	1210118	10	39	48.1	16.9	3.62	150
	1245265	8					
16	1210139	10	48	59.2	20.8	5.42	100
	1245356	8					
19	1210160	10	57	70.3	24.7	7.96	50
	1245435	8					
23	1210201	10	69	85.1	29.9	11.83	20
	1245453	8					50
	1210202	10					20
	1245471	8					
26	1210222	10	78	96.2	33.8	14.99	20
	1245496	8					50
	1210232	10					
	1245574	8					
32	1210250	10	96	118	41.6	21.99	20

Test Requirements and Working Load Limits

Size mm	Breaking Force Min. kN	Mfg. Proof Force kN	Working Load Limit Tonnes	Mean Stress at Breaking Force N/mm ² Factor 4	Mean Stress at Proof Force N/mm ² Factor 2.5	Mean Stress at WLL N/mm ² Factor 1
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Crosby KUPLEX Grade 8 Chain and Components

7	61.6	38.5	1.5	800	500	200
8	80.6	50.3	2			
10	126	78.5	3.2			
13	214	133	5.3			
16	322	201	8			
19	454	284	11.2			
23	666	415	16			
26	850	531	21.2			
32	1,290	804	31.5			

KUPLEX GRADE 8 CHAIN IS COLOUR CODED BLACK

Crosby KUPLEX Grade 10 Chain and Components

7	77	49	2	1,000	625	250
10	158	98	4			
13	266	166	6.7			
16	402	251	10			
19	567	354	14			
23	831	519	21			
26	1,062	664	27			
32	1,609	1,005	40			

KUPLEX GRADE 10 CHAIN IS COLOUR CODED RED

Bend and Tensile Test as Specified in EN 818-2

Chain Dia. mm	Bend Deflection f Min. mm	Number of Samples per 200m Lot
7	5.6	2
8	6.4	2
10	8	2
13	10	2
16	13	2
19	15	1
23	18	1
26	21	1
32	26	1

Single link samples are taken from a lot size of 200m and bent to a minimum deflection f, as specified in the table above. Following removal of the force, the link is examined by a competent person. The link has to withstand the specified deflection for that diameter without any visible defects.

Tensile Test

Samples of chain as specified above, and in the finished condition, are subjected to a static tensile test and have to meet the minimum breaking force requirements as stated in the adjacent table, with a total ultimate elongation of not less than 20%.

Crosby Routine Component Sampling

All Crosby KUPLEX components are routinely verified with tensile and fatigue testing, above and beyond any current national or international standards requirement.

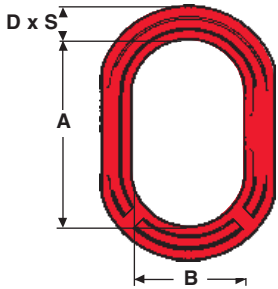
MASTER LINKS

All Crosby KUPLEX components have strength characteristics that exceed those of the chain with which they are to be used.

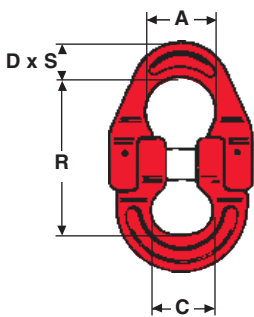
Each Crosby KUPLEX component has a reference which relates to one of the chain sizes listed on Page 447. Where the reference includes a number, e.g., KSS 10N, the number itself refers to the chain size with which it is to be used, in this case 10mm chain. A component having a reference comprising letters only, e.g., KM-C, is a multipurpose component and in order to determine the relevant chain size it is necessary to refer to the appropriate table. All Crosby KUPLEX components are subjected to 100% non-destructive testing in accordance with BS EN 10228:1999 Part 1. Each Crosby KUPLEX component conforms in all respects with EN 1677.

Crosby KUPLEX Master Links KM

Generous internal dimensions ensure that the KM series Master Links will fit onto a wide range of crane hooks. (For 3 and 4 leg slings, two KAL series Auxiliary Links must be attached or the KMML range utilized.)



Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)				Weight (kg)
		8	8+10	A	B	D	S	
2780173	KM-A	1.5	1.6	152	76	17	12	.47
2780182	KM-B	3.2	4.2	152	76	22	14	.81
2780191	KM-C	6.7	8.4	178	108	30	20	1.7
2780208	KM-D	12.8	14	228	127	40	27	4.06
2780217	KM-E	17	21.2	254	140	45	28	5.76
2780226	KM-F	24.1	30	305	171	53	36	10.56
2780235	KM-G	35.5	44	305	203	69	40	16.58
2780244	KM-HN	46	57	340	210	74	48	22.02



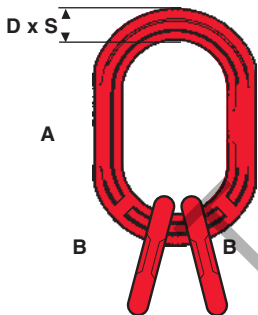
Crosby KUPLEX Auxiliary Link KAL

Mechanically assembled link for three and four leg slings used in conjunction with a KM series Master Link.

Crosby Stock No.	Reference	WLL (t)	Dimensions (mm)					Weight (kg)
			R	C	A (dia.)	D	S	
2780253	KAL7	3.2	79	31	34	17	12	.52
2780262	KAL10	6.4	110	44	46	24	17	1.74
2780271	KAL13	10.8	143	57	60	30	21	2.89
2780280	KAL16	16	187	71	76	37	26	6
2780299	KAL19	23	232	90	90	44	31	10.25

Crosby KUPLEX Litalink KMML

A cost-effective alternative to the KM/KAL assembly for three leg and four leg slings designed for use only under the uniform load method of working load rating for general use. * All welded construction.



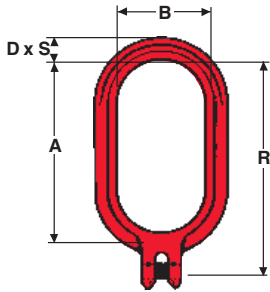
Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)				Weight (kg)
		8	8+10	Link A	Link B	Section D x S	B (dia.)	
2780306	KMML7	3.2	4.2	152 x 76	63 x 34	22 x 14	13	1.15
2780315	KMML10	6.7	8.4	178 x 108	86 x 44	30 x 20	20	2.9
2780324	KMML13	12.8	14	228 x 127	113 x 70	40 x 27	26	6.18
2780333	KMML16	17	21.2	254 x 140	135 x 70	45 x 28	32.5	10.76
2780342	KMML19	23.6	30	305 x 171	155 x 85	53 x 36	38	20
2780351	KMML23	35.5	44	305 x 203	175 x 105	69 x 40	47	35
2780360	KMML26	45	57	340 x 210	220 x 135	74 x 48	55	48

Crosby KUPLEX KM Series Usage Table

Crosby Stock No.	Reference	Single Leg		Two Leg		Three/Four Leg	
		8	8+10	8	8+10	8	8+10
2780173	KM-A	7	-	-	-	-	-
2780182	KM-B	8/10	7/10	7/8	7	7	7/8
2780191	KM-C	13	13	10	10	8/10	10
2780208	KM-D	16/19	16/19	13/16	13/16	13	13
2780217	KM-E	23	23	19	19	16	16
2780226	KM-F	26	26	23	23	19	19
2780235	KM-G	32	32	26	26	-	-
2780244	KM-HN	32	32	32	32	-	-



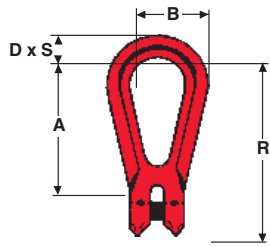
COMPONENTS



Crosby KUPLEX Kuplink KS

Alternative Master Link for single leg slings with the need for a Kupler.

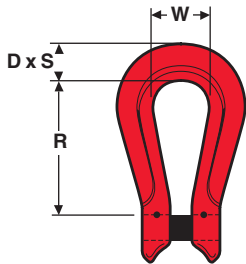
Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)
		8	8+10	A	B	R	D	S	
2780388	KS7N	1.5	2	152	76	178	17	13	.64
2780397	KS10N	3.2	4	152	76	190	22	16	1.15
2780404	KS13N	5.3	6.7	178	108	220	28	21	2.13
2780413	KS16N	8	10	228	127	285	38	27	4.69



Crosby KUPLEX Reeveable Egg Link KSS

The ideal link for collar slings – fully reeveable and compact.

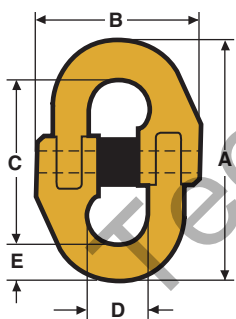
Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)
		8	8+10	A	B	R	D	S	
2780422	*KSS7N	1.5	2	70	35	92	14	10	.27
2780431	KSS10N	3.2	4	102	51	132	19	14	.74
2780440	KSS13N	5.3	6.7	137	67	177	26	20	1.92
2780459	KSS16N	8	10	172	83	220	32	24	3.17
2780468	KSS19N	11.2	14	203	98	261	38	28	5.58
2780477	KSS23N	16	21	238	114	305	40	38	8.42
2780486	KSS26N	21.2	27	273	133	351	46	46	14.51



Crosby KUPLEX Kupler K

This component is used for joining chain to the top link.

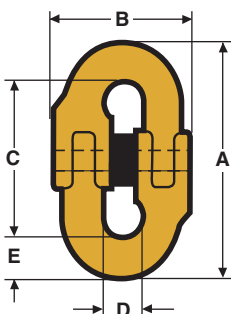
Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)				Weight (kg)
		8	8+10	R	W	D	S	
2780495	K7N	1.5	2	60	26	12	10	.15
2780501	K10N	3.2	4	73	35	19	15	.47
2780510	K13N	5.3	6.7	95	45	25	22	1.01
2780529	K16N	8	10	118	54	28	23	1.66
2780538	K19N	11.2	14	134	64	34	28	2.78
2780547	K23N	16	21	121	64	45	38	4.26
2780556	K26	21.2	27	140	82	48	45	6.30
2780574	K32	31.5	40	175	96	64	51	11.48



Crosby KUPLEX Component Connector TLN

A general purpose link for connecting chain to eye-type components. The TL is currently a Grade 8 component.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)
		8	8+10	A	B	C	D	E	
2780583	TL7N	1.5	-	67	49	48	14.3	9	.11
2780592	TL10N	3.2	-	89	66	70	19.2	13	.36
2780609	TL13N	5.3	-	118	85	85	26.5	17	.66
2780618	TL16N	8	-	144	96	106	32	19	1.08
2780627	TL19N	11.2	-	168	115	122	38.5	23	1.77
2780636	TL23N	16	-	206	140	150	49	28	2.8
2780645	TL26N	21.2	-	230	163	166	57	32	4.4
2780654	TL32N	31.5	-	278	210	200	63	39	8.4

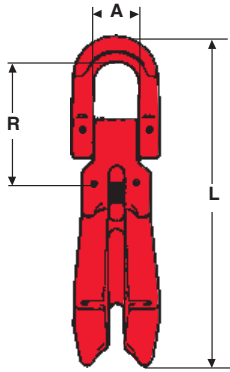


Crosby KUPLEX Chain Connector KJ

A flexible link for chain connection and suitable for making up endless slings. The KJ is currently a Grade 8 component.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)
		8	8+10	A	B	C	D	E	
2780663	KJ7	1.5	-	56	34	41	8	7.5	.09
2780672	KJ10	3.2	-	73	45	51	11.5	11	.27
2780681	KJ13	5.3	-	94	61	65	14.7	14	.44
2780690	KJ16	8	-	120	75	84	19.1	18	.83
2780707	KJ19	11.2	-	142	90	100	22.9	21	1.42

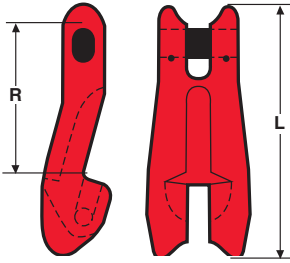
COMPONENTS



Crosby KUPLEX Shortening Clutch KSC N

This unique component for leg length adjustment is a major feature of the Crosby KUPLEX system. It accommodates loads of irregular shape or with a general lack of headroom and allows safe leg length adjustment of any number of legs with the load remaining fully in line.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)			Weight (kg)
		8	8+10	L	R	A	
2780716	KSC7N	1.5	2	161	60	26	.53
2780725	KSC10N	3.2	4	211	73	36	1.28
2780734	KSC13N	5.3	6.7	272	95	46	2.7
2780743	KSC16N	8	10	360	118	56	5.26
2780752	KSC19N	11.2	14	427	134	68	9.87

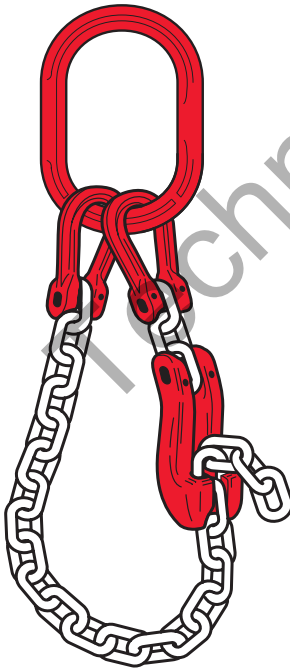


Crosby KUPLEX Shortening Clutch KSC

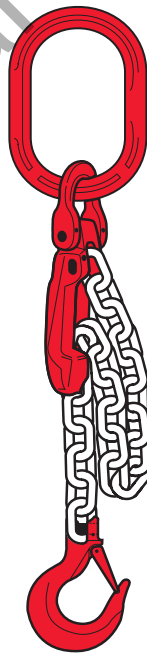
This component performs a function similar to that of the KSC N, but requires separate suspension on the master or auxiliary link using a Kupler and three links of chain.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)		Weight (kg)
		8	8+10	L	R	
2780761	KSC7	1.5	2	98	60	.37
2780770	KSC10	3.2	4	132	84	1.00
2780789	KSC13	5.3	6.7	171	108	1.89
2780798	KSC16	8	10	213	132	3.42
2780805	KSC23	16	21	308	190	10.02
2780814	KSC26	21.2	27	360	226	15.39
2780823	KSC32	31.5	40	448	310	29

The correct use of Shortening Clutches

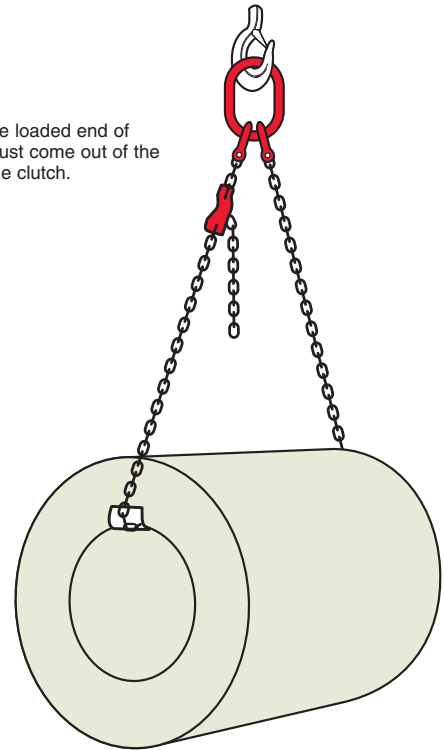


KSC Shortening Clutch in use. Basket configuration

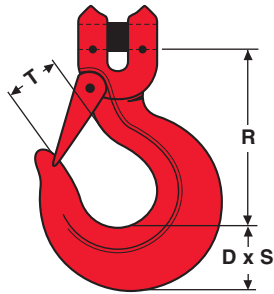


KSC N Shortening Clutch in use.

Note that the loaded end of the chain must come out of the bottom of the clutch.



COMPONENTS

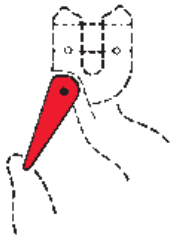


Crosby KUPLEX Sling Hook KHN L

This hook is most widely used in general purpose slinging.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)	
		8	8+10	R	D	S	T		No Latch	With Latch
							No Latch	With Latch		
2780832	KHN7L	1.5	2	75	26	19	25	21.5	.37	.42
2780841	KHN10L	3.2	4	107	37	27	35	31	1.06	1.1
2780850	KHN13L	5.3	6.7	139	48	36	45	40	2.24	2.6
2780869	KHN16L	8	10	171	59	43	56	53.5	4.31	4.41
2780878	KHN19L	11.2	14	203	70	50	66	62	7.53	7.81
2780887	*KH23	16	21	222	79	51	76	60	11.39	13.14
2780896	*KH26	21.2	27	251	89	60	85	72	16.06	18.94
2780903	KHN32L	31.5	40	334	118	85	113	106	32.66	34.61

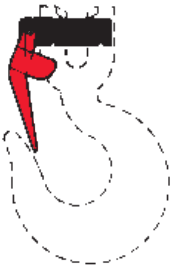
* Supplied without a latch as standard.



Crosby KUPLEX Safety Latch KHL N

A robust latch to prevent accidental detachment of the load.

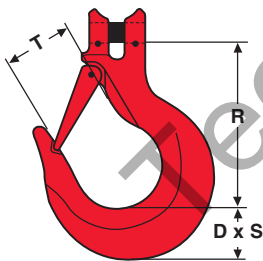
Crosby Stock No.	Reference	Part Number	Hook Reference
2780912	KHL7N	2781886	KHN7
2780921	KHL10N	2781895	KHN10
2780930	KHL13N	2781902	KHN13
2780949	KHL16N	2781911	KHN16
2780958	KHL19N	2781920	KHN19
2780967	KHL32N	2781939	KHN32



Crosby KUPLEX Hook Latch Assembly KHL

This assembly is for use with KH23 and KH26 and comprises a load pin to which the latch is attached.

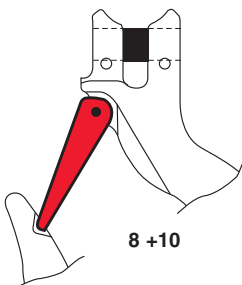
Crosby Stock No.	Reference	Part Number	Hook Reference
2780976	KHL23	2780887	KH23
2780985	KHL26	2780896	KH26



Crosby KUPLEX Wide Bowl Hook KHW N

This hook has a more generous throat opening and bowl than the sling hook.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)
		8	8+10	R	D	S	T		No Latch
							No Latch	With Latch	
2780994	KHW7N	1.5	2	95	29	21	37	32	.7
2781001	KHW10N	3.2	4	130	42	30	48	44	1.9
2781010	KHW13N	5.3	6.7	168	52	38	66	59	4
2781029	KHW16N	8	10	208	65	48	79	74	7.11

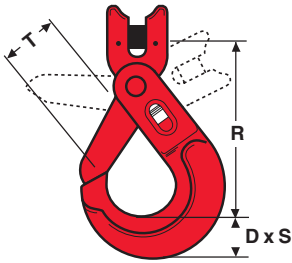


Crosby KUPLEX Safety Latch KHW L

This latch is designed for use on wide bowl hooks.

Crosby Stock No.	Reference	Part Number	Hook Reference
2781038	KHWL7	2780994	KHW7N
2781047	KHWL10	2781001	KHW10N
2781056	KHWL13	2781010	KHW13N
2781065	KHWL16	2781029	KHW16N

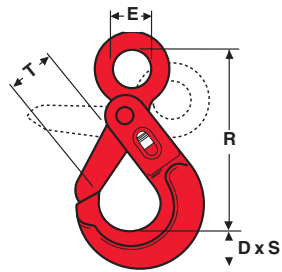
COMPONENTS



Crosby KUPLEX Safety Hook KHX C

All Safety Hooks in the KHX series are designed so the latch cannot open under load and requires pressure on the trigger to release the hook when the load is grounded.

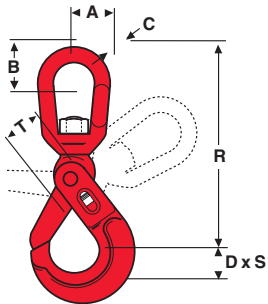
Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)				Weight (kg)
		8	8+10	A	B	D	S	
2781074	KHX7C	1.5	2	117	25	19	36	.82
2781083	KHX10C	3.2	4	146	32	24	47	1.51
2781092	KHX13C	5.3	6.7	181	42	30	56	3.15
2781109	KHX16C	8	10	223	49	36	70	5.27



Crosby KUPLEX Safety Hook KHX E

A variant of the KHX C with eye instead of clevis.

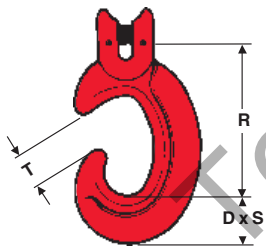
Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)
		8	8+10	R	D	S	T	E (dia.)	
2781118	KHX7E	1.5	2	142	25	19	36	23	.85
2781127	KHX10E	3.2	4	175	32	24	47	30	1.15
2781136	KHX13E	5.3	6.7	217	42	32	56	40	3.06
2781145	KHX16E	8	10	272	49	36	70	51	5.24
2781154	KHX19E	11.2	14	277	66	53	80	65	9.5
2781163	KHX23E	16	21	315	69	63	92	75	13.9



Crosby KUPLEX Swivel Safety Hook KHX S

Another variant incorporating bow and swivel.

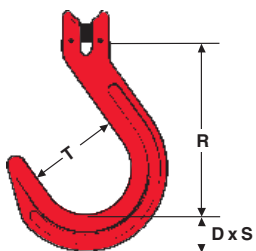
Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)							Weight (kg)
		8	8+10	A	B	R	D	S	T	C (dia.)	
2781172	KHX7S	1.5	2	42	42	202	25	19	36	12	1.24
2781181	KHX10S	3.2	4	50	46	235	32	24	47	15	2.11
2781190	KHX13S	5.3	6.7	60	62	293	42	30	56	19	4.28



Crosby KUPLEX C Hook KC

The profile of this hook is designed to prevent fouling of the tip of the hook on obstructions such as scaffolding.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)				Weight (kg)
		8	8+10	R	D	S	T	
2781207	KC7N	1.5	2	90	27	19	20	.45
2781216	KC10N	3.2	4	127	38	27	28	1.26
2781225	KC13N	5.3	6.7	165	49	36	39	2.78
2781234	KC16N	8	10	203	60	43	45	5.16
2781243	KC19N	11.2	14	242	71	52	55	8.83

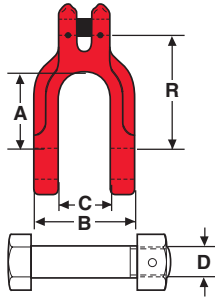


Crosby KUPLEX Foundry Hook KF

Designed with a wide throat to accommodate moulding box trunnions.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)				Weight (kg)
		8	8+10	R	D	S	T	
2781252	KF7N	1.5	2	118	24	22	64	.79
2781261	KF10N	3.2	4	137	32	30	76	1.74
2781270	KF13N	5.3	6.7	165	41	38	89	3.45
2781289	KF16N	8	10	222	52	48	114	7.40
2781298	KF19N	11.2	14	248	61	56	127	11.82
2781305	KF23N	16	21	280	78	64	140	20.3

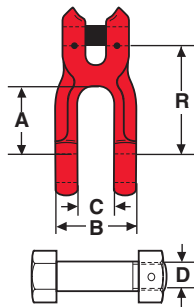
COMPONENTS



Crosby KUPLEX Shackle KDL

Has a wide jaw and attaches directly to the chain. Complete with bolt, hexagon nut and cotter pin.

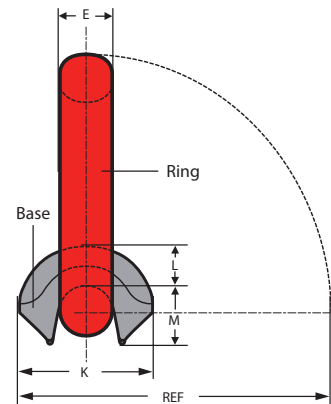
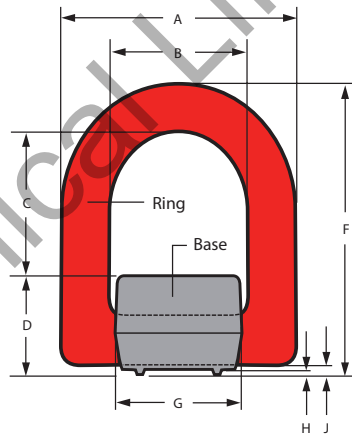
Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)
		8	8+10	A	B	C	R	D	
2781314	KDL7N	1.5	2	48	65	35	71	19	.71
2781323	KDL10N	3.2	4	74	83	44	104	22	1.36
2781332	KDL13N	5.3	6.7	98	109	57	136	29	3.02
2781341	KDL16N	8	10	122	140	73	173	35	6.18
2781350	KDL19N	11.2	14	145	162	86	203	44	10.62



Crosby KUPLEX Narrow Jaw Shackle KDN

Similar to KDL series, but for applications calling for a narrower jaw.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)					Weight (kg)
		8	8+10	A	B	C	R	D	
2781369	KDN7N	1.5	2	36	42	20	57	14	.26
2781378	KDN10N	3.2	4	53	58	28	83	20	.85
2781387	KDN13N	5.3	6.7	72	74	35	106	24	1.68
2781396	KDN16N	8	10	83	90	44	127	30	3.14



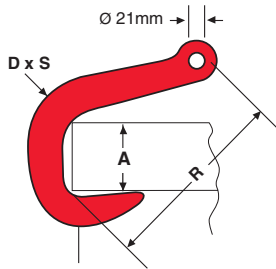
Crosby KUPLEX KWLR Weldable Lifting Ring

A weldable lifting ring, fully compatible with the relevant sized Kuplex 8+10 components.

Crosby Stock No.	Reference	Ring					Base mm							Weight (kg) (Ring + Base)	To Suit Normal Chain Size (mm)	
		A	B	C	R	D	F	G	H	J	K	L	M			Ref
2781403	KWLR7 (2t)	60	37	39.5	26	13	77	33	2	4	32	10	16	83	.31	7
2781412	KWLR10 (4t)	87	51	51	35	18	103	46	2	4	45	12	22	113	.83	10
2781430	KWLR13 (6.7t)	109	67	74	44	23	139	60	2	4	60	18	26	154	1.82	13
2781449	KWLR16 (10t)	117	67	68	54	27	147	60	2	4	75	23.5	30	167	2.75	16
2781458	KWLR23 (21t)	168	100	103	70	36	207	90	3	7	94	29	41	230	6.95	23

Welding advice leaflets are available on request.

COMPONENTS

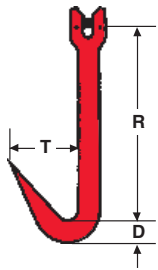


Crosby KUPLEX Pipe Hook KPH

For lifting pipes. Used in pairs.

Crosby Stock No.	Type/Size Reference	WLL (t)		Dimensions (mm)				Weight (kg)
		8	8+10	R	A	D	S	
2781467	KPH10	3.2	4	238	82	45	25	3.06

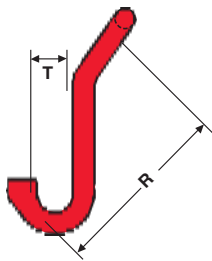
Note: Sling rated at minimum 30° from the vertical (60° included angle).
MUST BE USED IN PAIRS.



Crosby KUPLEX Bale Hook KB

For handling soft bales such as wood pulp, scrap paper, etc. Used in pairs.

Crosby Stock No.	Type/Size Reference	WLL (t)		Dimensions (mm)			Weight (kg)
		8	8+10	R	D	T	
2781476	KB7	1.5	2	191	22	70	.85



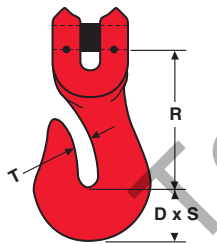
Crosby KUPLEX Drum Hook KD

For lifting steel drums. Used in pairs.

Crosby Stock No.	Type/Size Reference	WLL (t)		Dimensions (mm)		Weight (kg)
		8	8+10	R	A	
2781485	KD7	1.5	2	150	28	.93

Note: Sling rated at minimum 30° from the vertical (60° included angle).
MUST BE USED IN PAIRS.

LASHING EQUIPMENT



Crosby KUPLEX Grab Hook KG

The narrow throat is intended to engage one link of chain. The preferred use is in lashing chain and similar assemblies.

It is not suitable for slinging applications and should never be used for shortening sling legs.

Crosby Stock No.	Reference	WLL (t)		Dimensions (mm)				Weight (kg)
		8	8+10	R	D	S	T	
2781494	KG7N	1.5	2	51	22	14	9	.23
2781500	KG10N	3.2	4	79	31	17	12	.69
2781519	KG13N	5.3	6.7	102	41	22	16	1.54
2781528	KG16N	8	10	124	50	27	20	2.71



Crosby KUPLEX Turnbuckle KTB

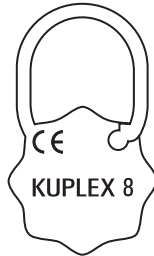
For chain tensioning in load lashings and anchorages. NOT TO BE USED FOR LIFTING PURPOSES.

Crosby Stock No.	Type/Size Reference	WLL (t)		Dimensions (mm)		Weight (kg)
		8	8+10	R Min.	R Max.	
2781537	KTB10	3.2	4	375	611	2.36
2781546	KTB13	5.3	6.7	400	616	3.63

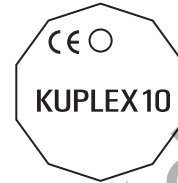
COMPONENTS

Sling Tags

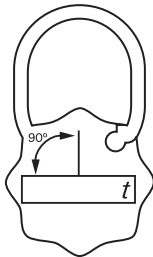
One size tag to cover all KUPLEX slings from 7mm to 32mm.



The reverse of Grade 8 KTS and KTP tags

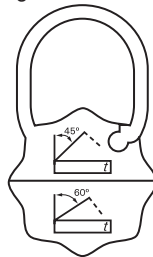


The reverse of Grade 10 KTS10 and KTP10 tags



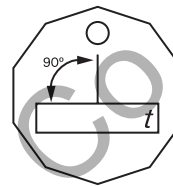
KTS Tag

For single leg slings for general service



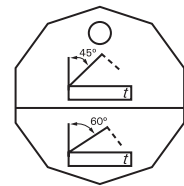
KTP Tag

For multi-leg slings for general service



KTS10 Tag

For single leg slings for general service

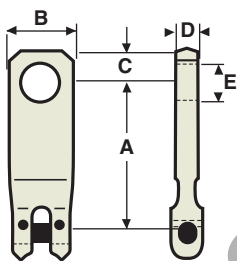


KTP10 Tag

For multi-leg slings for general service

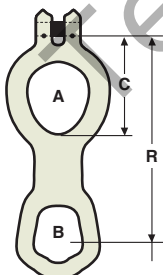
Skip Lifting Components

All Skip Lifting Components are designed to accommodate 13mm Crosby KUPLEX Grade 8 or Grade 10 short link alloy chain and are supplied in a zinc plated finish. All items are tested and certified in accordance with EN 818-2 and EN 1677.



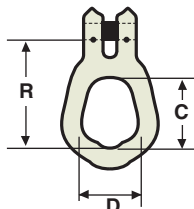
Top Suspension Plates

Crosby Stock No.	Type Size/Reference	WLL (t)		A	Dimensions (mm)				Weight (kg)
		8	8+10		B	C	D	E	
2781555	C151401	5.3	6.7	153	62	32	20	36	1.59
2781564	C151402	5.3	6.7	140					1.52
2781573	C151403	5.3	6.7	127					1.4
2781582	C151404	5.3	6.7	114					1.35
2781591	C151405	5.3	6.7	101					1.17
2781608	C151406	5.3	6.7	88					1.03



Keep Plate C2247

Crosby Stock No.	Type Size/Reference	WLL (t)		A	Dimensions (mm)				Weight (kg)
		8	8+10		B	C	R		
2781617	C2247	5.3	6.7	95 x 76	74 x 58	133	301	3.48	



Single Trunnion Plate C1513

Crosby Stock No.	Type Size/Reference	WLL (t)		R	Dimensions (mm)		Weight (kg)
		8	8+10		C	D	
2781626	C1513	5.3	6.7	112	74	58	1.5

Limitations on Use

Due to risk of embrittlement, Crosby KUPLEX slings should not be used in acid or caustic solutions nor in heavily acidic or caustic-laden atmospheres. In uncertain conditions consult your distributor.

Crosby KUPLEX slings must not be heat-treated, galvanised, plated, coated or subject to any process involving heating or pickling. Each of these processes can have dangerous effects and will invalidate the manufacturer's certificate.

Crosby KUPLEX slings may be used at temperatures down to -40°C with no reduction in the working load limit. The use of Crosby KUPLEX chain slings within the permissible temperature range in the tables shown does not require any permanent reduction in working load limit when the chain sling is returned to normal temperatures. A sling accidentally exposed to temperatures in excess of the maximum permissible should be withdrawn from service immediately and returned to the distributor for thorough examination.

Sling Temperature	Reduction in Working Load Limit	
	Grade 8	Grade 10
-40°C to 200°C	None	None
200°C to 300°C	10%	DO NOT USE
300°C to 400°C	25%	
Above 400°C	DO NOT USE	

When using Crosby KUPLEX slings in exceptionally hazardous conditions, the degree of hazard should be assessed by a competent person and the working load limit adjusted accordingly. Examples include the lifting of persons and lifting of potentially dangerous loads such as molten metals, corrosive materials or fissile material and certain offshore activities.

Before First Use

No sling should be put into use until a valid Test Certificate has been supplied.

Check that the sling is precisely as ordered and all chain and components are marked 'KUPLEX' or 'CGK'.

Check that all identification references and working load limits marked on the sling correspond with the information on the sling Manufacturer's Certificate.

Before Each Use

Before each use a Crosby KUPLEX sling should be subject to inspection with a visual check on the condition of the chain sling to identify obvious damage or deterioration which might affect its fitness for use. Withdraw the sling from service if in any doubt.

In Use

Never exceed the working load limit (WLL) marked on the sling.

Strictly observe the marked restriction on the angle of the sling legs.

Take into consideration the cumulative effect of de-rating depending on the method of slinging to ensure that the chain sling selected has a working load limit (WLL) equal to or greater than the mass to be lifted.

Ensure that the master link articulates freely on the hook of the crane or other lifting appliance.

The crane hook should be positioned over the centre of gravity of the load and the sling rigged from that point, using shortening clutches for leg adjustment where necessary.

Make sure that the load is free to move and is not bolted or held down in any way. Check also that there are no obstacles to making the lift.

Do not leave a suspended load unattended.

When a chain is used in choke hitch, i.e. with the sling legs passed around the load and hooked or linked back onto the chain, the working load limit (WLL) of the chain sling should be no more than 80% of that marked.

The working load limits stated in EN 818-4 have been determined on the basis that the loading of the chain sling is symmetrical.

This is when the sling legs are symmetrically (i.e. equally) disposed in plan and all have the same angle to the vertical. For unequally loaded Crosby KUPLEX chain slings the lift should be referred to a competent person to establish a safe rating for the chain sling. Alternatively in the case of asymmetric loading, the chain sling should be rated at half the marked WLL.

ATLAS LIFTING EQUIPMENT LTD.			
MANUFACTURER'S CERTIFICATE & EC DECLARATION OF CONFORMITY. LIFTING ACCESSORIES		REFERENCE NO: CMF16863	
MANUFACTURED BY: ATLAS LIFTING EQUIPMENT LTD. TITAN WORKS PROMETHEUS STREET LINCOLN LN1 2NS		SUPPLIED TO: SAMSON CASTINGS PROVIDENCE WORKS LOWER GORNA WEST MULLANE DY3 1LW	
QTY	DESCRIPTION	IDENTIFICATION NUMBER	WLL
1	KUPLEX GRADE 8 10MM WQ LEG CHAIN SLING FITTED WITH SHORTENING CLUTCHES AND TERMINATING IN 2 X KHXT0C SAFETY HOOKS REACH 8 MTR COMPONENTS PARTS 1 x KM-C - P2Y246 2 x KSC10N - P5Y246 2 x KHXT0C - P1Y213 2 x 2.6 MTRS 10MM KUPLEX 10030RPC GRADE 8 CHAIN - 242967 HARMONISED STANDARD BS EN 818-4	KCS8184	4.25 TONNES 0-45°
ON BEHALF OF THE ABOVE FIRM		DECLARATION OF CONFORMITY	
SIGNED		ON BEHALF OF THE FIRM ABOVE I DECLARE THAT THE PRODUCT DESCRIBED HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE NAMED STANDARD AND CONFORMS TO ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF THE MACHINERY DIRECTIVE 2006/42/EC	
DATE			

An instruction leaflet 'Safe Use of Crosby KUPLEX Chain Slings' should be supplied with each new sling.

Enter details of sling in the register of lifting equipment.

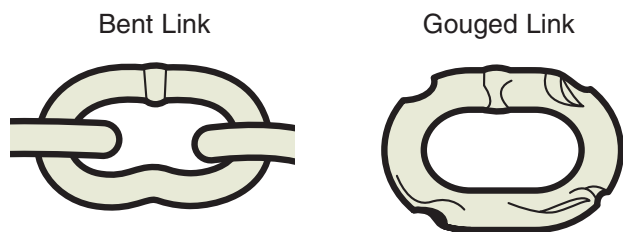
Ensure that personnel who are to use the Crosby KUPLEX sling have received appropriate instruction and training.

Maintenance

Inspection

Crosby KUPLEX chain slings should be checked before each period of use and the sling withdrawn from service and referred to a competent person if any of the following are observed:

- Distortion of the links, connectors or hooks
- Stretch in any link of the chain links
- Wear in the chain, especially between adjoining links. The mean diameter at any point should be no less than 90% of the nominal chain diameter. SEE TABLE BELOW



- Cuts, nicks, gouges, cracks, excessive corrosion, heat discoloration or any other defects
- Signs of any increase in the throat opening of hooks. This should not exceed 10% of the nominal value or be such as to allow the safety latch, if fitted, to become disengaged.

Thorough Examination

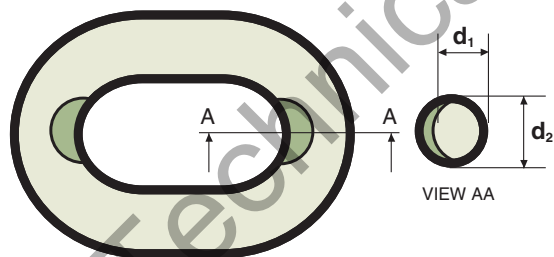
It is a requirement of the European Standards for Grade 8 chain slings that a thorough examination should be carried out by a competent person at intervals not exceeding twelve months. This maximum interval may be less where legal requirements differ throughout the European Union. For example, in the UK the majority of industry sectors apply a maximum interval of six months.

- Where slings are in constant use, or the conditions of use are severe, it is advisable to carry out more regular inspections.
- Never attempt on-site repair of Crosby KUPLEX slings.
- Your Crosby KUPLEX distributor will carry out the examination and any necessary repair, and provide a suitable record for you to enter in your register of lifting equipment.

Limits of Allowable Wear in Crosby KUPLEX Grade 8 and 10 Chains

If it were possible to define allowable wear in precise and simple terms, there would be less need to employ skilled and experienced examiners. The fact is that the decisions as to what is allowable and what is not can be highly subjective and need to take into account a variety of conditions and circumstances. The most common form of wear is that which occurs at the internal inter-link locations and, in order to detect this condition, it is necessary to manipulate the links in such a way as to allow examination and measurement at these points. It should be noted that in the chain in

Nominal Diameter (mm)	Minimum Mean Diameter (mm) $\leq \frac{d_1 + d_2}{2}$
7	6.3
8	7.2
10	9
13	11.7
16	14.4
19	17.1
23	20.7
26	23.4
32	28.8



new condition, there may have been some flattening of the material at the link intrados due to contact with the forming mandrel and it is standard practice to determine the diameter of the material in the chain as new by taking the mean of two measurements at right angles in the same plane as d_1 and d_2 .

Legal Requirements

Supply

All new Crosby KUPLEX chain slings supplied within EU Member States fully comply with the essential health and safety requirements of the Machinery Safety Directive 2006/42/EC. Each country is bound to implement this directive with national legislation, e.g., in the United Kingdom the applicable regulations are the Supply of Machinery Regulations 1998.

Use

Once a Crosby KUPLEX sling has been first put into service within an EU Member State, different EU Directives apply to its subsequent use.

These are the Use of Work Equipment Directive (98/655/EEC) and its amending Directives 95/63/EC. Member States were bound to implement this directive with national regulations by 5th December 1998. In the United Kingdom these are the Lifting Operations and Lifting Equipment Regulations (LOLER) which are part of the Provision & Use of Work Equipment Regulations (PUWER) relevant to lifting equipment.

SAFE SLINGING

The safe and competent use of lifting gear cannot be adequately learned from a manual. A good slinger learns his trade only after practical training and lengthy experience. However, this section establishes some sound basic principles and highlights some of the major malpractices which must be avoided.

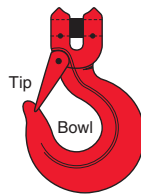
1. Evaluating the Load

The user should take all practicable steps to establish the weight of any load. An intelligent guess is not good enough. A drawing may be available giving the weight or it may be calculable within reasonable limits of accuracy. In the case of multi-piece loads (e.g., a bundle of steel rods) one item may be weighed in order to calculate the total weight of the load. If it is likely that the load may have to be lifted again, the weight should be clearly marked on it.

2. Tip Lifting of Hooks

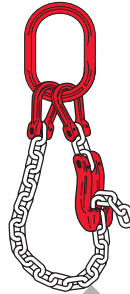
All KUPLEX hooks are designed to support the load in the bowl. Users should ensure that the hook of a sling engages freely in the lifting point so that the weight of the load is supported in the bowl of the hook.

Wedging or forcing the hook tip into the lifting points results in the hook being stressed in a manner for which it was not designed which may easily lead to hook deformation and premature failure.



3. Misuse of Shortening Clutches

KUPLEX Shortening Clutches can be misused. Ensure that the chain carrying the load always leads out of the bottom of the clutch as illustrated. If the direction is reversed so that the load-carrying chain leads out of the top of the clutch, this can result in the front portion of the clutch being pulled off and the load released.

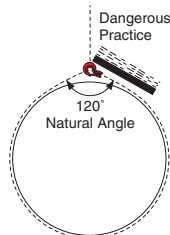


4. Knotting, Twisting and Transverse Bending of Chain

Chain is designed to support a load in a straight line with the line of force running through the crowns of each link. Chain that is twisted, or even worse knotted, cannot develop its full strength and will almost certainly fail prematurely. Users should remove twists from a chain leg before lifting and should NEVER knot a chain. If it is necessary to shorten a chain, a KUPLEX Shortening Clutch should be used. Similarly, chain that is bent under tension across a sharp corner is stressed in a manner for which it is not designed. The user should use timber (or any other suitable material) packing pieces to reduce the severity of this type of stressing.

5. Battening Down

It is sometimes believed that slings in choke hitch can be made more secure by striking the hook, link or adjacent chain in an attempt to force the bight into closer contact with the load. This malpractice is often known as 'battening down' and is dangerous. The bight should be allowed to assume its natural angle which will be about 120°.



6. Load Stability

Good slingers will develop the habit of assessing unusual loads and estimating the centre of gravity and then attaching the sling in such a manner that the centre of gravity is below the lifting points, or if this is impossible, well within them. If there is the slightest doubt of the stability of a load, it should be slowly lifted just clear of the ground. If the load tilts, the sling should be refixed in a more stable position.

7. Slingers Duty of Self Protection

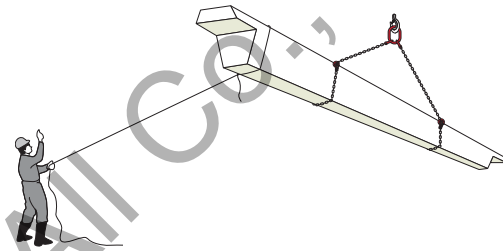
Slingers should wear suitable protective clothing. At the moment when the strain is taken on a sling, the slinger's hands and feet should be clear of the load and he should then position himself so that he does not risk injury if the load were to fail.

8. Shock Loading

Crane drivers, particularly, and slingers should be aware of the dangers of shock loading. Shock loads may break a chain even though the weight of the load being lifted is well below the working load limit for that chain. High acceleration forces, or shock loads, may be caused by the sudden operation of the crane, by not taking up slack before starting to lift, or by the sudden impact of falling loads. Crane drivers should always lift and lower slowly.

9. Tag Lines

When lifting long loads, particularly in confined spaces, slingers should attach a rope or 'tag line' to one or both ends of the load so that rotational movement may be controlled.

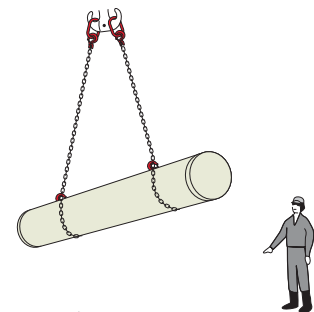


10. Code of Signals

Slingers and crane drivers should use an approved Code of Signals before lifting operations are commenced. There should be an agreement between the crane driver and the slingers that one slinger only is in charge of a lift, and only he will give signals. The crane driver should ignore signals from all other personnel except the EMERGENCY STOP signal which may be given by anyone present and must always be acted upon.

11. Landing of Load

Before a load is lifted, a place should be prepared where it is to be put down. The nature of the load will determine the type of preparation necessary but most loads should be lowered onto timber battens. The sling may then be easily withdrawn. The load should never be landed directly on to the chain.



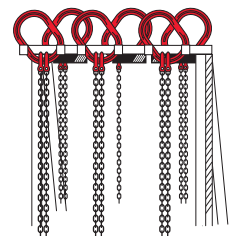
12. Hooking Back Unused Legs

In the case of multi-leg slings with not all legs in use, the unused legs should be hooked back by engaging the hook in the master link or the master assembly. Similarly, after finishing a lift, if the sling is to remain on the crane hook, all hooks should be hooked back into the master link or the master assembly.



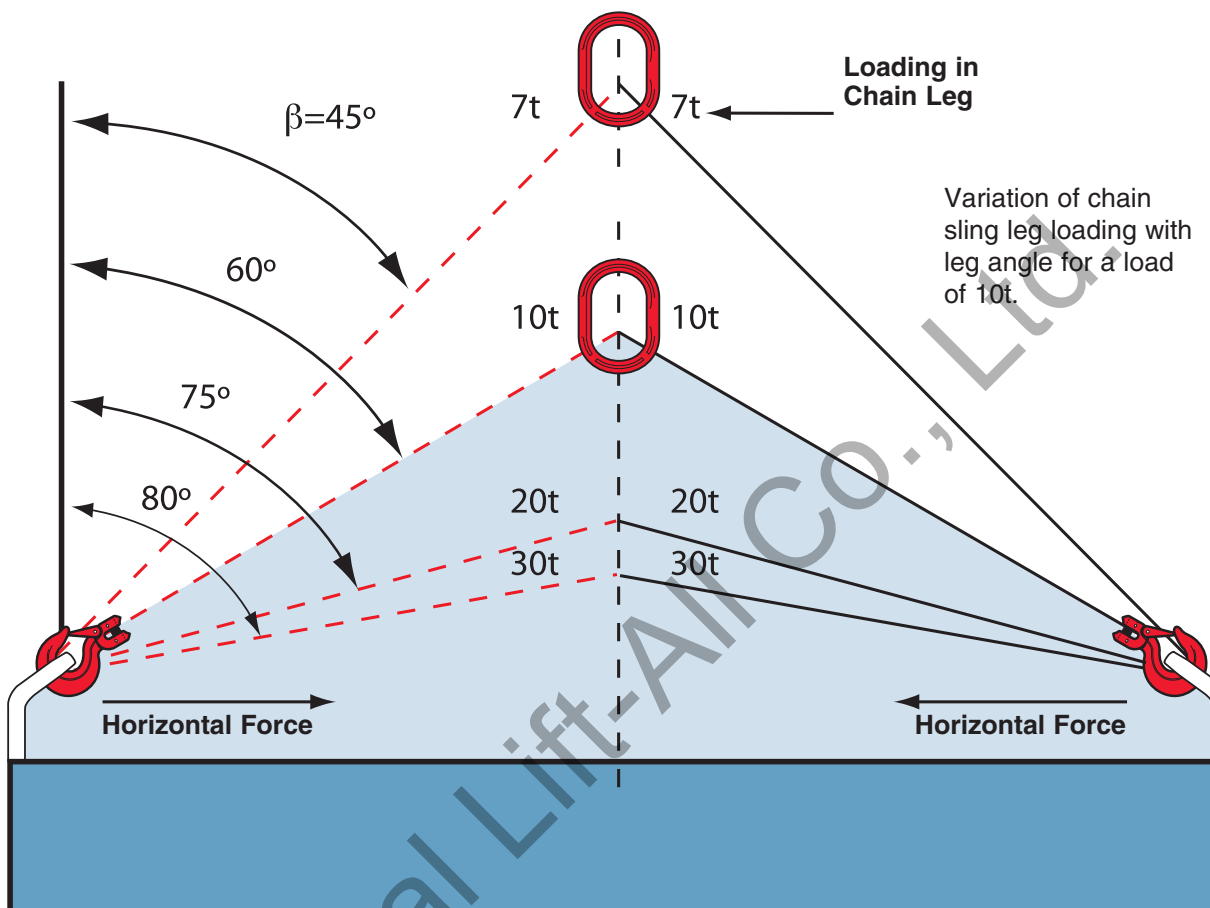
13. Sling Stowage

When lifting operations are finished, slings should be removed from crane hooks and stowed on a properly designed rack. They should not be left lying on the floor where they may suffer damage or may be lost.



CHAIN SLINGS

Restrictions on the angle of use



All multi-leg chain slings exert a horizontal component of force, which increases as the included angle becomes greater.

No chain sling should be used if the angle from the vertical exceeds 60°, as beyond this point the forces in the legs drastically increase.

DO NOT USE MULTI-LEG CHAIN SLINGS AT ANGLES WITHIN THE SHADED AREA.

Angles of less than 15° should also be avoided as these can lead to the load becoming unstable.

Further Advice and Information

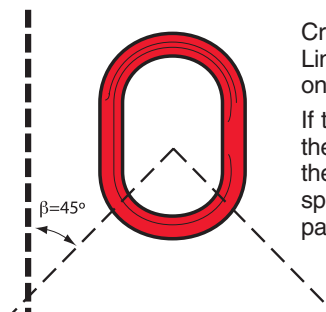
For further advice on any lifting problems, consult first with your Crosby KUPLEX distributor, who is fully qualified to advise on all aspects of lifting, as well as providing all the necessary equipment and services.

All the advice and information contained in this publication is in line with recognised European and International Standards and Codes of Practice.

A Code of Practice for the Safe Use of Lifting Equipment is available from the Lifting Equipment Engineers Association.



Lifting Equipment Engineers Association
3, Osprey Court, Kingfisher Way, Hinchingsbrooke
Business Park, Huntingdon, Cambs. PE29 6FN UK
Telephone: + 44 (0) 1480 432801



Crosby KUPLEX 8+10 Master Links have an angle guide forged onto them.

If the sling angles are on or inside the guidelines the sling is within the angle range $0^\circ < \beta \leq 45^\circ$, as specified in the load chart on page 441.

Further References

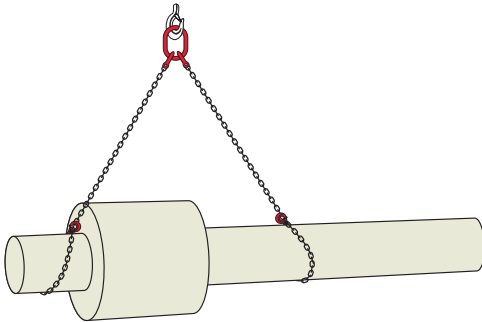
- BS EN 818 Parts 1, 2, 4 and 6 Short Link Chain for Lifting Purposes - Safety
- BS EN 1677 Components for Slings - Safety
- BS 6166 Part 3 Lifting Slings Guide to Selection and Safe Use
- ISO 3056 Use and Maintenance of Non-calibrated Lifting Chain and Chain Slings
- ISO 7593 Chain Slings Assembled by Methods Other Than Welding - Grade T(8)
- ISO 8539 Forged Steel Lifting Components for use with Grade T(8) Chain
- ISO 12480-1 Planning and Management of Lifting Operations and Safe Systems of Working

SPECIAL APPLICATIONS

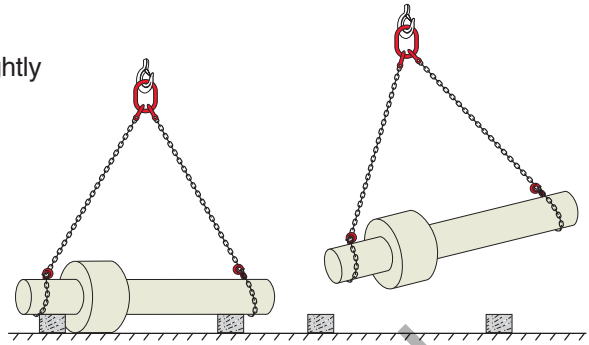
This section deals with more complicated lifting problems and slightly more advanced techniques in dealing with them.

1. Out-of-Balance Loads

Some loads are asymmetrical and, therefore, do not balance about their centre point and require more careful handling. It is essential for the slinger to acquire the skill of estimating the position of the centre of gravity and then to place the crane hook immediately above this estimated point.



If the shape of the load permits it, the sling should be positioned equidistant about the centre of gravity ensuring a safe horizontal lift.

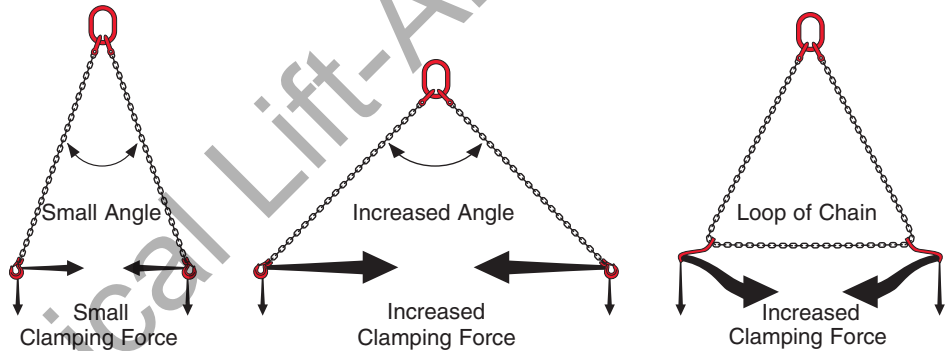


If an out-of-balance load is fitted with a sling attached in such a manner that the crane hook is not immediately above the centre of gravity, the load will tilt until the centre of gravity is directly beneath the crane hook. In this case, the sling leg nearer the heavy end will be withstanding a greater force than the leg at the lighter end. This situation could become progressively more extreme until one leg is supporting virtually all the load whilst the second leg is acting merely as a steadying leg.

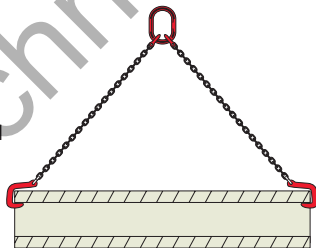
It is impossible to give precise guidance since loads come in an infinite variety of shapes and sizes but the slinger should be aware that when handling an out-of-balance, tilted load the leg at the heavier end could be supporting anything up to 100% of the weight and in extreme cases a sling should be selected which is capable of safely supporting the whole load on one of its legs.

2. Clamping Force

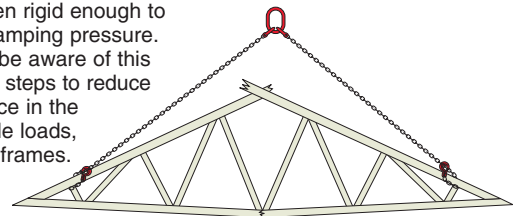
Multi-leg slings impact a 'clamping force' or a compressive force on the load which increases as the included angle is increased. This force is also much increased in the type of sling where the hooks are threaded on a loop chain.



The slinger should be aware of this force so that he may use it to his advantage and avoid the dangers which it might cause. For example, with this shape of load, the clamping force is used to good effect in ensuring that the hooks are clamped tightly against the load. A minimum of 60° included angle is required (30° to vertical).



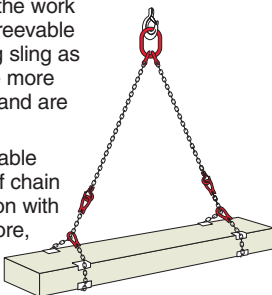
Cases have occurred where the load has not been rigid enough to withstand the clamping pressure. Slingers should be aware of this danger and take steps to reduce the clamping force in the case of crushable loads, e.g., lightweight frames.



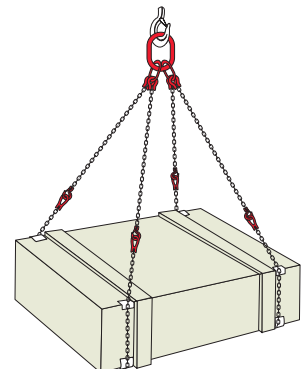
3. Combination Slings

Concrete beams, steel joists, etc. can be lifted with a two-leg sling in choke hitch but if the work is repetitive, it is better to use two short reeveable collar slings in conjunction with a two leg sling as illustrated. The reeveable collar slings are more convenient to maneuver under the load and are cheaper to replace when worn.

When using combination slings the reeveable collar slings must have the same size of chain as the multi-leg sling used in combination with them. In the case illustrated right, therefore, the complete combination should be rated as a two leg sling in choke hitch.



Large packing cases, bundles of steel sheets and similarly shaped loads can be handled by a double basket sling. But a more convenient alternative is a four leg sling used in combination with two reeveable collar slings as illustrated. For rating purposes, this combination can be regarded as a double basket sling provided, as always, all slings in the combination are of the same chain size.



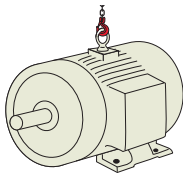
METHODS OF SLINGING

Single Leg Slings

1. Straight lift

WLL: Under normal conditions the WLL will be the WLL for single leg slings.

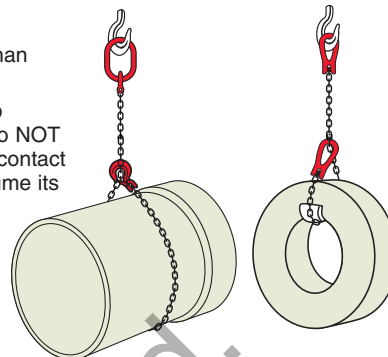
Comment: A suitable method of lifting an effectively balanced load from a single lifting point.



2. Choke lift

WLL: The WLL should be no more than 75% of the WLL for single leg slings.

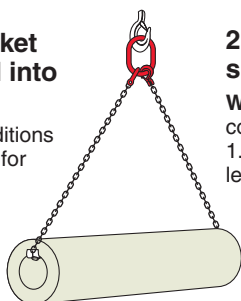
Comment: This method forms a loop which tightens as the load is lifted. Do NOT attempt to force the bight into closer contact with the load. Allow the chain to assume its natural angle. Single leg slings in choke hitch are not suitable for lifting long loads which might tilt or for any load which is not effectively balanced in the single loop.



Single Leg Slings in Basket Hitch

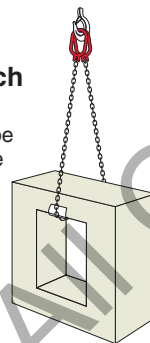
1. Single leg in basket hitch (back hooked into top link)

WLL: Under normal conditions the WLL will be the WLL for single leg slings.



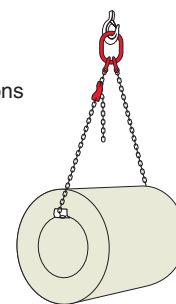
2. Reeveable collar sling in basket hitch

WLL: Under normal conditions the WLL will be 1.41 x the WLL for single leg slings.



3. Single adjustable basket sling

WLL: Under normal conditions the WLL will be the WLL for single leg slings.



Comment: A single leg sling, back hooked to form a basket hitch, assumes the appearance of a two leg sling but it should never be rated as such. It should be noted that the master link is only designed for single leg loading and, therefore, the single leg WLL should never be exceeded. The included angle should not be allowed to exceed 90°.

Comment: The included angle should not be allowed to exceed 90°.

Comment: It would be advisable to fit a master link suitable for two leg rating in spite of the single leg rating of this type of sling. The included angle must not be allowed to exceed 120°.

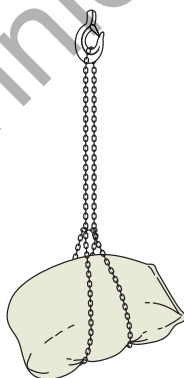
If a 2 leg masterlink is used and the sling is a controlled angle of maximum 90° included the 2 leg rating can apply.

Endless Slings

1. Choked endless

WLL: Under normal conditions the WLL will be the WLL for endless slings.

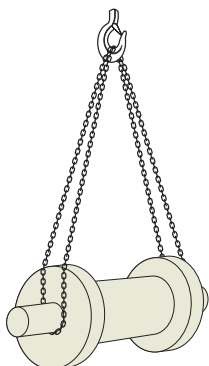
Comment: There is no need to de-rate in this instance by virtue of the choked configuration.



2. Double endless

WLL: Under normal conditions the WLL will be the WLL for endless slings.

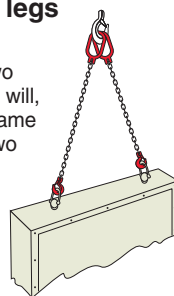
Comment: The maximum included angle between diagonally opposite legs should not exceed 90°.



Two Single Leg Slings Used Together

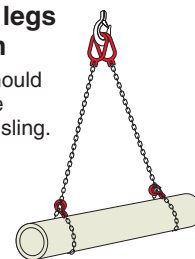
1. Two single legs in straight lift

WLL: Rate as a two leg sling. The WLL will, therefore, be the same as an equivalent two leg sling.



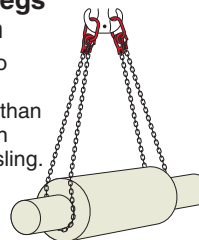
2. Two single legs in choke hitch

WLL: The WLL should be the WLL for the equivalent reeved sling.



3. Two single legs in basket hitch

WLL: Rate as a two leg sling. The WLL should be no more than that applicable to an equivalent two leg sling.



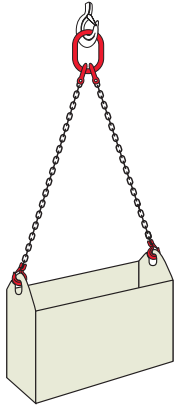
Comment: Two single leg slings should not be used together to form a pair unless:

- They are of the same type, grade, size and length.
- They are both marked with the same WLL.
- The included angle between the two legs does not exceed 120° (measured between diagonally opposite legs in example 3).
- The crane hook is large enough to comfortably accept both upper terminal fittings of the slings.

METHODS OF SLINGING

Two Leg Slings

1. Straight lift



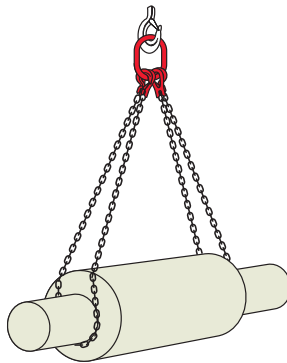
WLL: Under normal conditions the WLL will be the WLL for a two leg sling.

2. Choke hitch



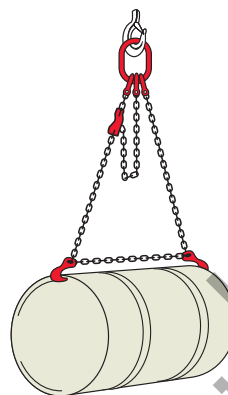
WLL: The WLL should be no more than 80% of the WLL for a two leg reeved sling.

3. Basket hitch



WLL: Rate as a two leg sling. The angle of any leg should not exceed 45° from the vertical.

4. Drum sling



WLL: Should be rated as a single leg sling.

5. Two leg sling – with only one leg in use



WLL: Rate at half the working load marked on the sling. The WLL should be no more than 80% if used in choke hitch.

Comment: In example 3, basket hitch - the sling assumes the appearance of a four leg sling but it should be noted that the master link will be designed for two leg loads only and the sling should, therefore, be rated as a two leg.

If, therefore, drums of different lengths are lifted, a Crosby KUPLEX Shortening Clutch should be fitted so that the length of chain can be adjusted to maintain this angle.

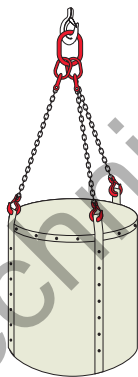
Comment: In example 4, drum sling - in this configuration the included angle should be maintained as close as possible to 60° (30° from vertical).

Comment: In example 5, two leg sling with only one leg in use, ensure the unused leg is hooked back out of harm's way.

Three Leg Slings

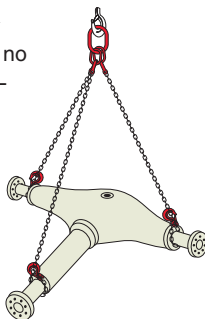
1. Straight lift

WLL: Under normal conditions the WLL will be the WLL for three leg slings.



2. Choke hitch

WLL: The WLL should be no more than 80% of the WLL for a four leg sling.

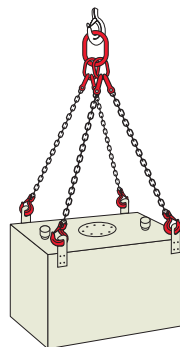


Comment: Rate as indicated only in cases where the load appears to be reasonably equally distributed between all three legs. If two are obviously supporting most of the load, rate at 2/3 of the marked working load.

Four Leg Slings

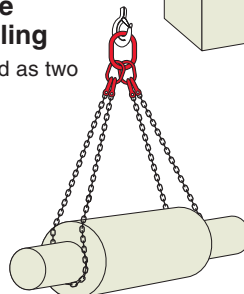
1. Straight lift

WLL: under normal conditions the WLL will be the WLL for four leg slings.



3. Double basket sling

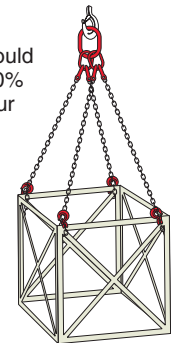
WLL: Rated as two leg sling.



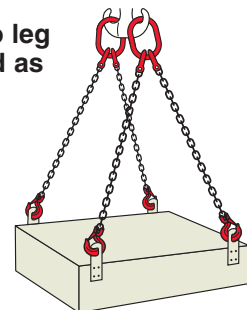
Comment: This WLL applies to double basket slings designed as such and fitted with a KUPLEX Master Assembly strong enough for this duty. It does not apply to a back-hooked two leg sling. The maximum included angle should be 90° measured between diagonally opposite legs, or maximum 45° from vertical.

2. Choke hitch

WLL: The WLL should be no more than 80% of the WLL for a four leg sling.



4. Two, two leg slings used as four leg



WLL: The WLL should be no more than that applicable to an equivalent four leg sling.

Comment: Refer to comments on page 461 for slings used in pairs.