GR8 INDUSTRIES

Alloy chain slings and fittings

labour
Department:
Labour
REPUBLIC OF SOUTH AFRIC

Chain slings
SANS7593, SANS50818-6 and EN818-4

Working load limits
using Grade 80 short link chain

chain Ø	1 Leg				2 Leg				3 and 4 Leg			
					angle between the legs				angle between the legs			
	0°	choke	endless basket	endless reeving	60°	90°	120°	choke	60°	90°	120°	choke
[mm]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]
7	1.50	1.20	1.95	2.40	2.55	2.10	1.50	1.65	3.90	3.15	2.25	2.55
8	2.00	1.60	2.60	3.20	3.40	2.80	2.00	2.20	5.20	4.20	3.00	3.40
10	3.15	2.52	4.10	5.04	5.36	4.41	3.15	3.47	8.19	6.62	4.73	5.36
13	5.30	4.24	6.89	8.48	9.01	7.42	5.30	5.19	13.78	11.13	7.95	9.01
16	8.00	6.40	10.40	12.80	13.60	11.20	8.00	8.80	20.80	16.80	12.00	13.60
20	12.50	10.00	16.25	20.00	21.25	17.50	12.50	13.75	32.50	26.25	18.75	21.25
22	15.00	12.00	19.50	24.00	25.50	21.00	15.00	16.50	39.00	31.50	22.50	25.50
26	21.20	16.96	27.56	33.92	36.04	29.68	21.20	23.32	55.12	44.52	31.80	36.04
32	31.50	25.20	40.95	50.40	53.55	44.10	31.50	34.65	81.90	66.15	47.25	53.55
load factor												
	1.00	0.80	1.30	1.60	1.70	1.40	1.00	1.10	2.60	2.10	1.50	1.70

the working load limits above apply to normal conditions of use, in straight configuration and based on the “uniform load” method of rating

factor of safety 4:1

Working load limits
using Grade 100 short link chain

chain Ø	1 Leg				2 Leg				3 and 4 Leg			
					angle between the legs				angle between the legs			
	0°	choke	endless basket	endless reeving	60°	90°	120°	choke	60°	90°	120°	choke
[mm]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]
8	2.50	2.00	3.25	4.00	4.25	3.50	2.50	2.75	6.50	5.25	3.75	4.25
10	4.00	3.20	5.20	6.40	6.80	5.60	4.00	4.40	10.40	8.40	6.00	6.80
13	6.70	5.36	8.71	10.72	11.39	9.38	6.70	7.37	17.42	14.07	10.05	11.39
16	10.00	8.00	13.00	16.00	17.00	14.00	10.00	11.00	26.00	21.00	15.00	17.00
load factor												
	1.00	0.80	1.30	1.60	1.70	1.40	1.00	1.10	2.60	2.10	1.50	1.70

the working load limits above apply to normal conditions of use, in straight configuration and based on the “uniform load” method of rating

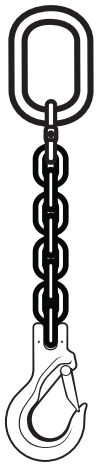
factor of safety 4:1

Working load limit as a function of temperature

	0°C - 200°C	200°C - 300°C	300°C - 400°C	400°C and above
Gr 80	1.0 x WLL	0.9 x WLL	0.75 x WLL	do not use
Gr100	1.0 x WLL	do not use	do not use	do not use

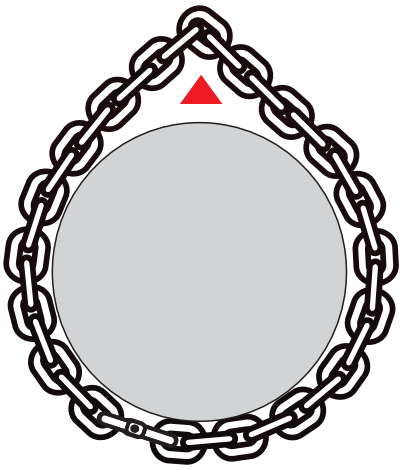
Typical chain sling configurations

▲ nip angle angle not more than 90°

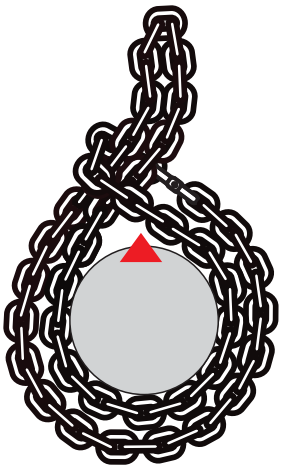


one leg

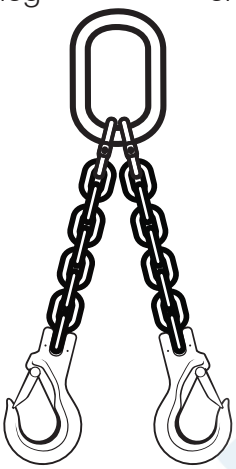
choke hitch



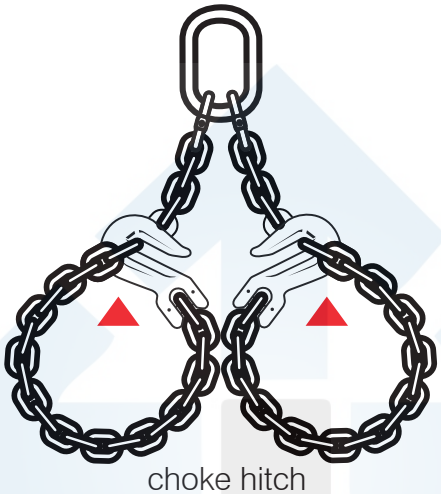
endless basket



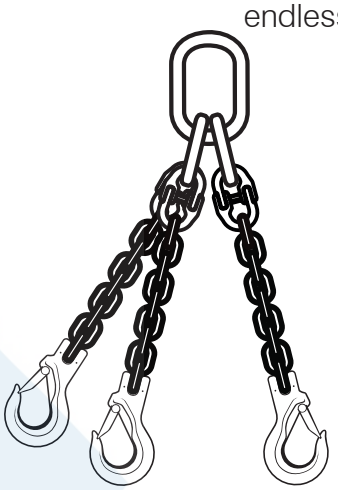
endless reeving



two leg



choke hitch



three leg

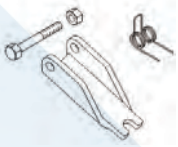
four leg

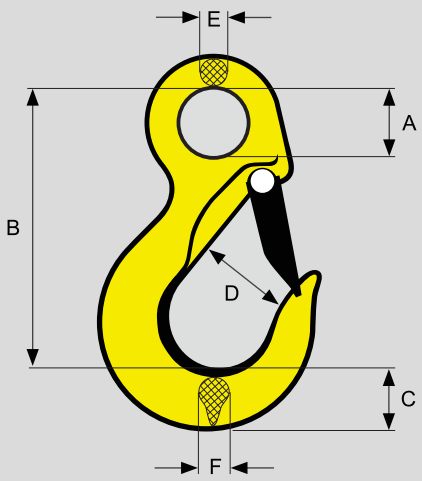
choke hitch

Sling hook c/w safety latch - eye type EN1677-2

product code	for chain size	dimensions						weight
		A	B	C	D	E	F	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
SSE7-8	7 / 8	25.0	95.0	26.0	32.5	13.0	18.0	0.5
SSE10-8	10	37.0	114.0	37.0	33.0	17.0	22.0	0.9
SSE13-8	13	43.0	148.0	47.0	47.0	21.0	29.0	1.8
SSE16-8	16	49.0	181.0	55.0	53.0	23.0	35.0	3.4
SSE20-8	20	60.0	215.0	60.0	55.0	28.0	44.0	5.2
SSE22-8	22	60.0	240.0	77.0	87.0	32.0	49.0	9.4
SSE26-8	26	62.0	275.0	85.0	97.0	35.0	60.0	13.5
SSE32-8	32	87.0	350.0	91.0	120.0	38.0	65.0	19.5

Safety latch kits available separately

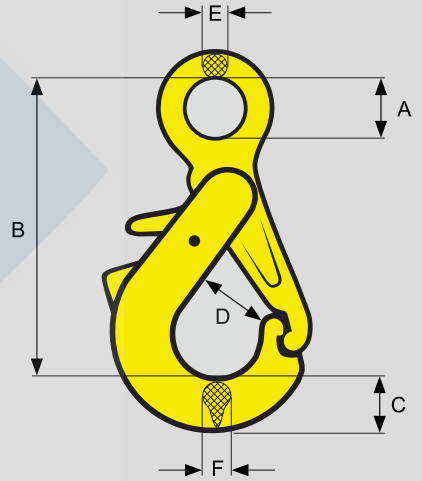




Self locking hook latch - eye type EN1677-3

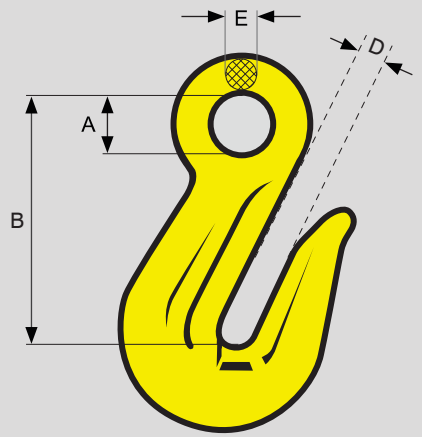
product code	for chain size	dimensions						weight
		A	B	C	D	E	F	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
SLE7-8	7 / 8	25.0	128.0	26.0	33.0	12.0	18.5	0.8
SLE10-8	10	32.0	157.0	28.0	41.0	16.0	23.0	1.3
SLE13-8	13	40.0	191.0	35.0	49.0	18.0	29.0	2.3
SLE16-8	16	49.0	230.0	38.0	58.0	25.0	33.0	4.0
SLE20-8	20	67.0	268.0	62.0	71.0	27.0	52.0	7.5
SLE22-8	22	69.0	315.0	70.0	85.0	29.5	52.5	10.0
SLE26-8	26	80.0	363.0	75.0	110.0	34.0	60.0	18.0

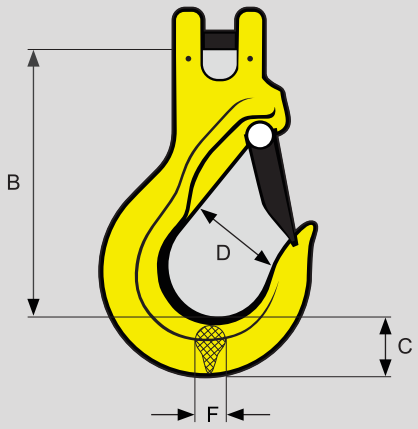
Trigger kits available separately



Grab hook with cradle - eye type EN1677-2

product code	for chain size	dimensions				weight
		A	B	D	E	
	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
GBE7-8	7 / 8	17.0	57.5	9.0	10.0	0.3
GBE10-8	10	20.0	78.0	12.0	15.0	0.6
GBE13-8	13	26.0	97.5	14.5	17.0	1.2
GBE16-8	16	30.0	103.0	17.5	18.0	2.4
GBE20-8	20	37.0	137.0	21.0	24.0	4.6
GBE22-8	22	43.0	166.0	25.0	26.0	6.2

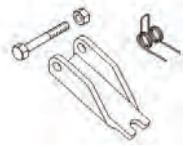


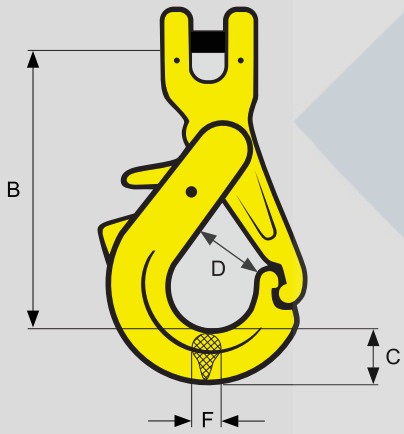


Sling hook c/w safety latch - clevis type EN1677-2

product code	for chain size	dimensions				weight
		B	C	D	F	
	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
SCC7-8	7 / 8	84.0	34.0	21.0	18.0	0.
SSC10-8	10	103.0	34.0	27.0	22.0	0.9
SSC13-8	13	124.0	50.0	42.0	29.0	2.0
SSC16-8	16	143.0	60.0	46.0	36.0	3.6
SSC20-8	20	174.0	62.0	49.0	44.0	6.0
SSC22-8	22	195.0	71.0	65.0	51.0	10.0

Safety latch kits available separately

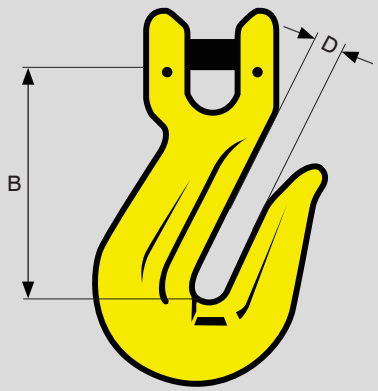




Self locking hook latch - clevis type EN1677-3

product code	for chain size	dimensions				weight
		B	C	D	F	
	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
SLC7-8	7 / 8	107.0	26.0	32.0	18.5	0.8
SLC10-8	10	137.0	28.0	41.0	22.0	1.3
SLC13-8	13	166.0	33.0	49.0	28.5	2.9
SLC16-8	16	187.0	39.0	59.0	32.0	3.9
SLC20-8	20	225.0	59.0	82.0	47.0	8.3
SLC22-8	22	270.0	72.5	82.0	52.5	11.2
SLC26-8	26	310.5	75.0	110.0	60.0	18.5

Trigger kits available separately

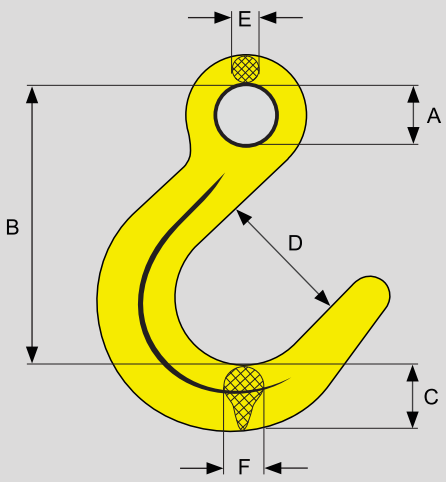


Grab hook with cradle - clevis type EN1677-2

product code	for chain size	dimensions		weight
		B	D	
	[mm]	[mm]	[mm]	[kg]
GBC7-8	7 / 8	54.0	10.0	0.4
GBC10-8	10	75.0	12.5	0.8
GBC13-8	13	93.0	15.0	1.5
GBC16-8	16	102.0	17.0	2.8
GBC20-8	20	124.0	22.0	4.8
GBC22-8	22	142.0	24.0	9.0

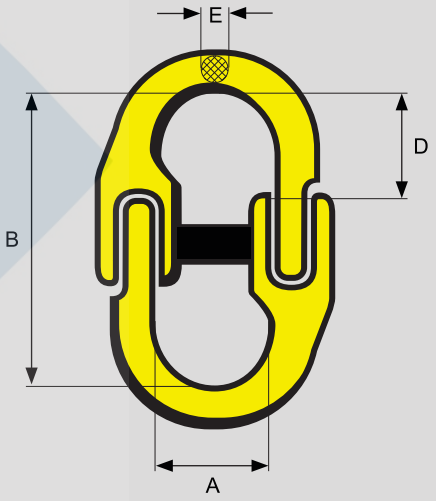
Foundry hook - eye type
EN1677-2

product code	for chain size	dimensions						weight
		A	B	C	D	E	F	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
FDE7-8	7 / 8	18.0	119.0	33.0	61.0	12.0	25.0	0.7
FDE10-8	10	21.0	144.0	38.0	74.0	14.0	33.5	1.3
FDE13-8	13	27.0	170.0	48.0	84.0	19.0	39.0	2.8
FDE16-8	16	32.0	200.0	53.0	99.0	23.0	46.0	4.9
FDE20-8	20	38.0	175.0	65.0	110.0	26.0	57.0	10.0
FDE22-8	22	43.0	253.0	68.0	120.0	30.0	69.0	11.5



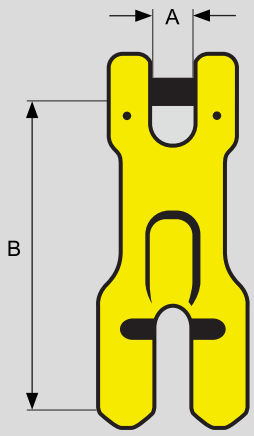
Connecting link
EN1677-1

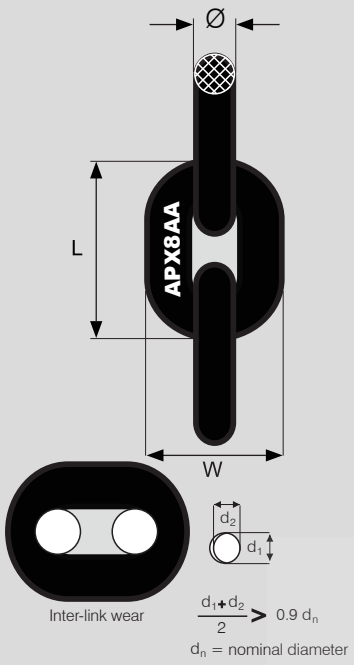
product code	for chain size	dimensions				weight
		A	B	D	E	
	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
CNL7-8	7 / 8	22.0	58.0	22.0	10.0	0.15
CNL10-8	10	29.0	68.0	26.0	12.0	0.30
CNL13-8	13	32.0	88.0	31.0	16.0	0.60
CNL16-8	16	38.0	105.0	40.0	20.0	1.00
CNL20-8	20	43.0	118.0	45.0	25.0	1.90
CNL22-8	22	53.0	138.0	55.0	27.5	3.00
CNL26-8	26	65.0	150.0	63.0	31.0	4.00
CNL32-8	32	80.0	194.0	67.0	40.0	8.50



Shortening clutch - clevis type
EN1677-2

product code	for chain size	dimensions		weight
		A	B	
	[mm]	[mm]	[mm]	[kg]
SCC7-8	7 / 8	10.0	72.0	0.4
SCC10-8	10	14.0	100.0	0.9
SCC13-8	13	17.0	124.0	1.9
SCC16-8	16	19.0	155.0	3.2

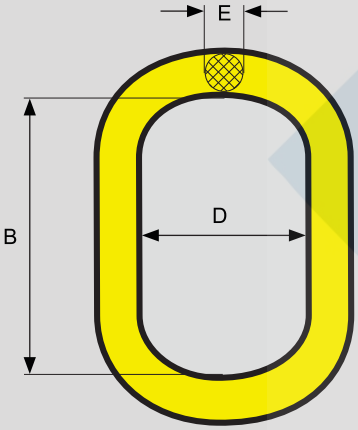




Short link chain Grade T(8) EN818-2

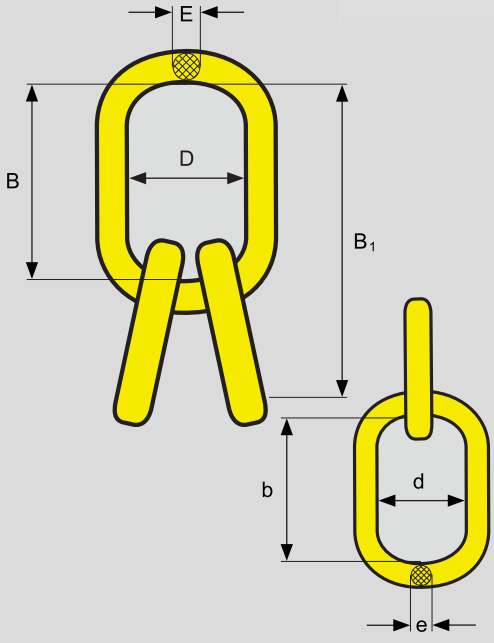
product code	size	links per mtr	dimensions			break load	weight
			Ø	L	W		
	[mm]		[mm]	[mm]	[mm]	[t]	[kg/mtr]
APX7-8	7 / 8	47.0	7.0	21.0	25.9	6.28	1.08
APX10-8	10	33.3	10.0	30.0	37.0	12.80	2.22
APX13-8	13	25.6	13.0	39.0	48.1	21.60	3.73
APX16-8	16	20.8	16.0	48.0	59.2	32.80	5.58
APX20-8	20	16.7	20.0	60.0	74.0	51.20	8.92
APX22-8	22	15.2	22.0	66.0	81.4	62.00	10.80
APX26-8	26	12.8	26.0	78.0	96.2	86.80	15.10
APX32-8	32	10.4	32.0	96.0	118.4	131.20	22.80

Inter-link wear may be tolerated until the thickness at the point of contact has been reduced to 90% of the nominal diameter. This measurement should be taken in 2 directions at right angles from each other.



Oblong master link for 1 & 2 leg slings EN1677-4

product code	nominal break load	dimensions			weight
		B	D	E	
	[t]	[mm]	[mm]	[mm]	[kg]
ML7-8	16.00	129.0	67.0	14.0	0.36
ML10-8	28.00	138.0	68.5	19.0	0.95
ML13-8	34.00	161.0	88.0	23.0	1.50
ML16-8	55.00	181.5	88.0	26.0	2.85
ML20-8	82.00	224.0	108.0	33.5	4.25
ML22-8	123.00	270.0	145.0	38.0	7.20
ML26-8	192.50	307.0	158.0	45.0	13.00
ML32-8	232.50	360.0	176.0	52.0	17.00

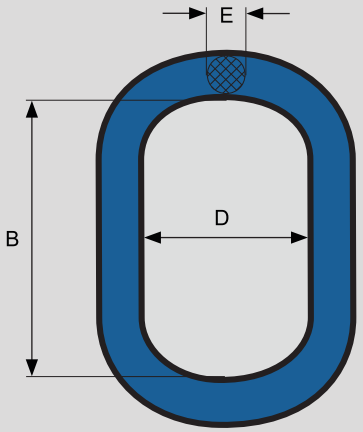


Sub assembly for 3 & 4 leg slings EN1677-4

product code	nominal break load	dimensions of master link				dimensions of sub			weight
		B1	B	D	E	b	d	e	
	[t]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
SAL7-8	17.20	248.0	136.0	74.0	18.0	114.0	56.0	18.0	2.20
SAL10-8	34.00	290.0	170.0	92.0	25.0	122.0	66.0	20.0	3.10
SAL13-8	52.00	340.0	200.0	119.0	31.0	138.0	72.0	31.0	6.50
SAL16-8	68.00	390.0	250.0	151.0	35.0	136.0	70.0	35.0	11.00

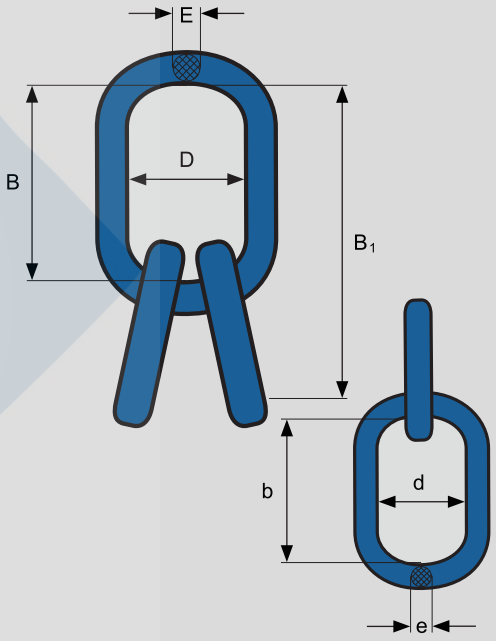
Fram Oblong master link for 1 & 2 leg slings EN1677-4

product code	working load limit	dimensions			weight
		B	D	E	
	[t]	[mm]	[mm]	[mm]	[kg]
ML22.B.6	8.2	170.0	90.0	22.0	1.6
ML25.B.6	10.7	190.0	103.0	25.0	2.3
ML28.B.6	12.9	209.0	113.5	28.0	3.2
ML32.B.6	17.1	270.0	140.0	32.0	5.3
ML38.B.6	28.1	270.0	140.0	38.0	7.5
ML45.B.6	38.3	320.0	170.0	45.0	12.5
ML60.B.6	65.3	430.0	220.0	60.0	30.0



Fram Sub assembly for 3 & 4 leg slings EN1677-4

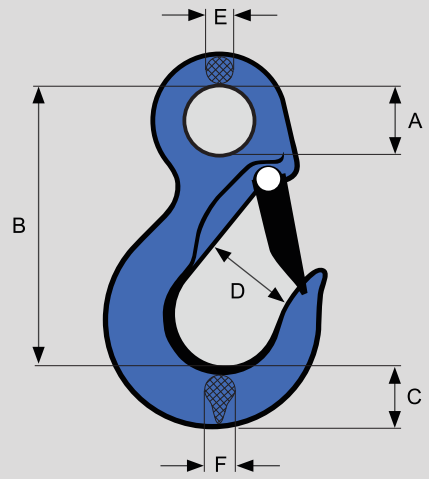
product code	working load limit	dim of master link		dim of sub		weight
		code	size	code	size	
	[t]		[mm]		[mm]	[kg]
SAQ.28.B	12.9	28.B.6	113.5 x 209	22.B.6	90 x 170	6.4
SAQ.32.B	17.1	32.B.6	140 x 270	25.B.6	100 x 190	9.9
SAQ.38.B	28.1	38.B.6	140 x 270	32.B.6	140 x 270	18.2
SAQ.45.B	38.3	45.B.6	170 x 320	38.B.6	140 x 270	27.7
SAQ.50.B	45.0	50.B.6	200 x 380	38.B.6	140 x 270	33.2
SAQ.60.B	65.3	60.B.6	200 x 430	50.B.6	200 x 380	66.0
SAQ.70.B	84.0	70.B.6	250 x 500	60.B.6	220 x 430	103.0



Sling ID tag for SWR sling IDS-8

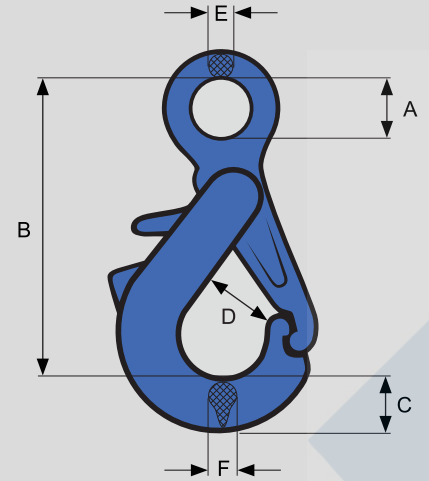
Sling ID tag for Gr80 chain sling IDC-8

Sling ID tag for Gr100 chain sling IDC-10



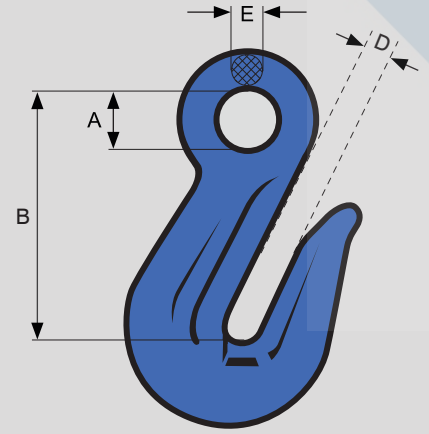
Sling hook c/w safety latch - eye type EN1677-2

product code	for chain size	dimensions						weight
		A	B	C	D	E	F	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
SSE8-10	8	25.0	98.0	30.0	37.0	11.0	18.0	0.8
SSE10-10	10	34.0	120.0	35.0	39.0	16.0	26.0	1.3
SSE13-10	13	42.0	153.0	50.0	52.0	19.0	33.0	2.3
SSE16-10	16	50.0	180.0	54.0	60.0	24.0	40.0	3.5



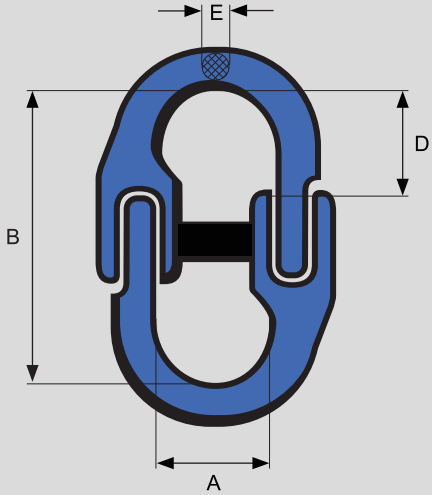
Self locking hook latch - eye type EN1677-3

product code	for chain size	dimensions						weight
		A	B	C	D	E	F	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
SLE8-10	8	27.0	136.0	27.0	37.0	11.0	20.0	0.8
SLE10-10	10	34.0	165.0	33.0	46.0	12.0	26.0	1.3
SLE13-10	13	40.0	200.0	40.0	53.0	17.0	33.0	2.9
SLE16-10	16	50.0	250.0	50.0	64.0	20.0	40.0	4.0



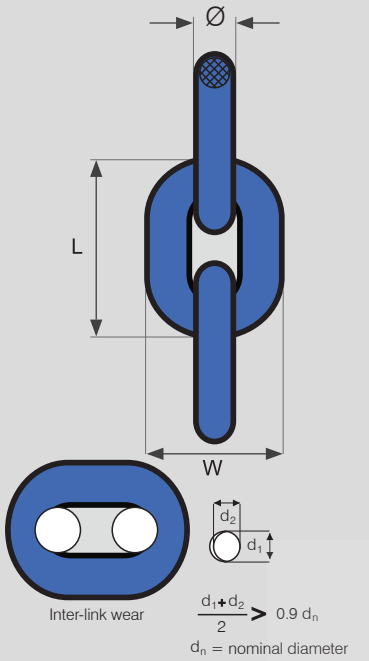
Grab hook with cradle - eye type EN1677-2

product code	for chain size	dimensions				weight
		A	B	D	E	
	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
GBE8-10	8	18.0	59.0	10.0	10.0	0.3
GBE10-10	10	22.0	82.0	13.0	14.0	0.6
GBE13-10	13	28.0	114.0	16.0	17.0	1.2
GBE16-10	16	35.0	118.0	18.0	19.0	2.4



Connecting link EN1677-1

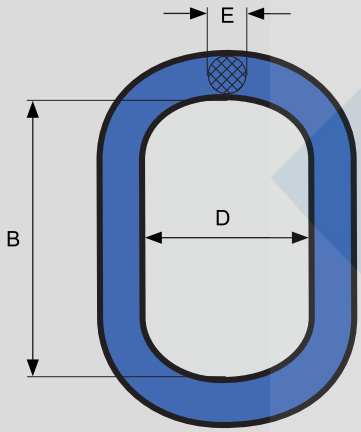
product code	for chain size	dimensions				weight
		A	B	D	E	
	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
CNL8-10	8	22.0	61.0	20.0	10.0	0.2
CNL10-10	10	25.0	70.0	23.0	13.0	0.3
CNL13-10	13	30.0	90.0	30.0	16.0	0.6
CNL16-10	16	38.0	105.0	40.0	20.0	1.0



Short link chain Grade V(10) EN818-2

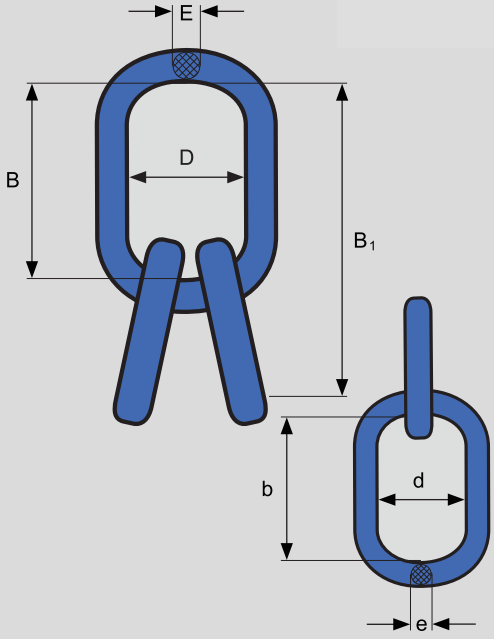
product code	size	links per mtr	dimensions			break load	weight
			Ø	L	W		
	[mm]		[mm]	[mm]	[mm]	[t]	[kg/mtr]
APX8-10	8	41.6	8.0	24.0	28.8	10.0	1.50
APX10-10	10	33.3	10.0	30.0	36.0	16.0	2.22
APX13-10	13	25.6	13.0	39.0	46.8	26.8	3.73
APX16-10	16	20.8	16.0	48.0	57.6	40.0	5.58

Inter-link wear may be tolerated until the thickness at the point of contact has been reduced to 90% of the nominal diameter. This measurement should be taken in 2 directions at right angles from each other.



Oblong master link for 1 & 2 leg slings EN1677-4

product code	nominal break load	dimensions			weight
		B	D	E	
	[t]	[mm]	[mm]	[mm]	[kg]
ML8-10	10.0	120.0	65.0	15.0	0.36
ML10-10	16.0	140.0	74.0	14.0	0.95
ML13-10	27.0	155.0	87.0	22.0	1.50
ML16-10	40.0	195.0	102.0	25.0	3.0



Sub assembly for 3 & 4 leg slings EN1677-4

product code	nominal break load	dimensions of master link				dimensions of sub			weight
		B1	B	D	E	b	d	e	
	[t]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
SAL8-10	21.2	225.0	156.0	93.0	22.0	70.0	34.0	16.0	2.20
SAL10-10	32.0	260.0	175.0	98.0	27.0	85.0	40.0	18.0	3.10
SAL13-10	56.0	314.0	200.0	110.0	32.0	114.0	48.0	22.0	6.50
SAL16-10	85.0	383.0	265.0	136.0	34.0	148.0	62.0	29.0	11.0

Product information

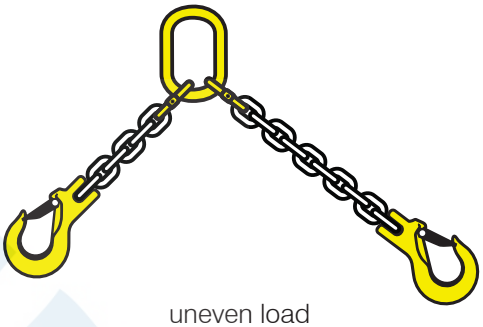
Product Benefits

- Independently tested
- Markings on all fittings
  - size
  - grade
  - manufacturer's mark
  - batch number
  - grade mark on load pins
- Markings on chain
  - grade
  - manufacturer's mark
  - batch number
- Certification provided on components and slings

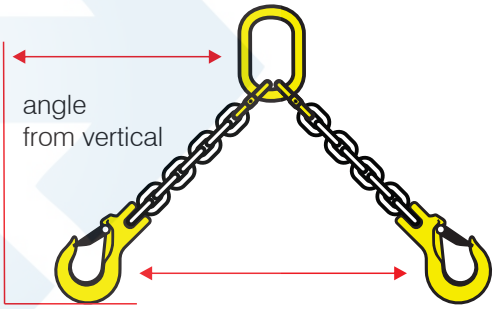
Understanding Working Load Limits

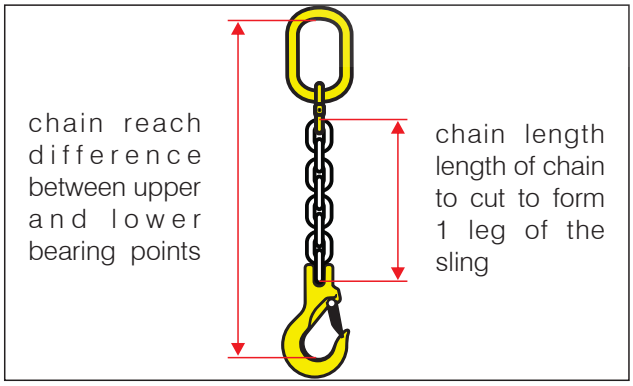
- When using a single leg sling in a choke hitch the working load limit (WLL) must be reduced by 20%.
- If using grab hooks as shortening clutches, those without cradles to support the chain links, result in the reduction of the WLL by 20%.
- The WLL of a two leg sling applies under normal conditions of use in a straight configuration and is based on the uniform load method of rating. If however, the load is not evenly distributed between each leg the WLL of the sling must be reduced by 30%.
- The WLL of a multi leg sling is always shown with the applicable angle between the legs or angle from the vertical. If the sling is used at a different angle, the WLL must be adjusted accordingly. Slings must not be used when the angle between the legs exceeds 120° or 60° from the vertical. (see WLL table for details)
- When a sling is wrapped around an edge, it is recommended that the radius of the corner is at least 2 x the chain size. When the radius is less than twice but still more than the chain size, the WLL must be reduced by 30% and it isn't recommended to use chain around a sharp edge.

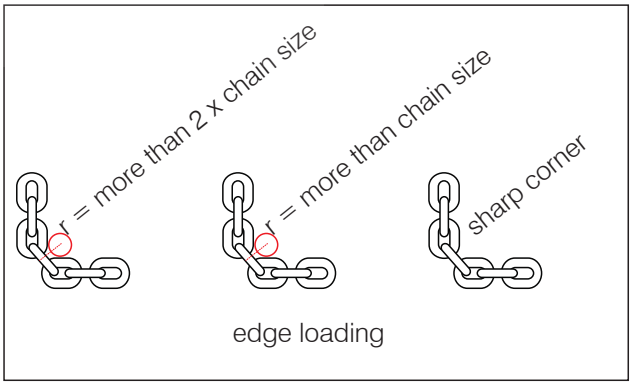
uniform load



uneven load







Safe use and maintenance

Limitations on the use of the sling due to environmental conditions or hazardous applications

a. Select material resistant to chemicals
   - Chain and components must not be used in alkaline or acidic environments.
   - Comprehensive and regular examination must be carried out when used in severe or corrosive inducing environments.

b. Restrictions due to temperature.

Temp. of sling	Reduction of WLL
-40 - 200°C	0%
+200 - 300°C	10%
+300 - 400°C	25%
above 400°C	do not use

Before putting the sling into first use check the following:

a. Availability of manufacturer's certificate.

b. The sling corresponds precisely to the product specified on the order.

c. The identification and WLL marked on the sling correspond with the information on the certificate.

d. All details of the sling are entered into a lifting equipment register.

e. The availability of instructions for use and adequate training has been given to staff to enable the safe use of the sling.

Before each use / period of use check the following:

a. A thorough inspection of the chain for twisted or bent links, nicks and gouges, excessive wear at the bearing points and stretched links. Increase in the throat opening of hooks. Distortion or damage to master link, coupling links and attachments.

b. Presence of a label and legibility of markings.

c. If any defects are detected withdraw the sling from service.

Selection and use of chain slings

a. Determine the mass of the load, its centre of gravity, attachment points and proposed method of attachment.

b. Observe the marked WLL and mode factors. In the case of multi-leg slings, this will include restrictions on the angle of sling legs.

c. Always protect slings from sharp edges using suitable packing.

d. Do not drag a load in the sling and do not drag slings over the ground or rough surfaces.

e. Take care to avoid snatch or shock loads which can overstress chain.

f. Never tie knots in the chain. Always make sure the chain isn't twisted before putting it under tension.

g. Never load a hook on its tip or wedge a hook into a lifting point.

h. Never use a multi-leg sling at an angle greater that 120° between the sling legs (60° from the vertical).

I. The load should be secured by the sling in such a manner that it cannot topple or fall out of the sling during lift. The sling should be arranged so that the point of lift is directly above the centre of gravity and the load is balanced and stable.

j. When using multi-leg slings make sure that the load is evenly distributed between the legs and each leg carries the same weight.

k. Slings should be protected from edges, friction and abrasion whether from the load or lifting appliance.

l. Care should be taken to ensure that the load is controlled to prevent accidental rotation or collision with objects.

m. Snatch or shock loading should be avoided as this will increase the forces acting on the sling.

n. Care should be taken to ensure the safety of personnel during lift. Hands and other body parts should be kept away from the sling to prevent injury as the slack is taken up.

o. When using less than the full number of legs, make sure that the legs not in use are hooked back into the Oblong or Sub-Assembly to avoid swinging or snagging causing accidental damage to property or personnel.

p. The load should be lowered in an equally controlled manner as when lifted.

q. Trapping the sling when lowering should be avoided and the load should not rest on the sling as this could cause damage.

r. On completion of the lifting operation the sling should be returned to proper storage. When not in use, slings should be stored in clean, dry conditions on a rack, away from abrasive grit and dust.

Periodic examination and maintenance

a. Examination periods should be determined by a competent person, taking into account the application, environment, frequency of use and similar matters, but in any event should be visually examined at least ever 3 months by a competent person.

b. The sling should be cleaned prior to inspection to ensure that it is free from oil, dust or any other matter which may cover up cracks or surface defects.

c. Records of such examinations should be maintained.

d. Damaged slings should be withdrawn from service. Never attempt to carry out repairs to the slings yourself.

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