

EVEREST Chain Instruments Co. (LLC)

شرکت قطعات زنجیری اورست (مسئولیت محدود)

اورست  
قطعات زنجیری



**شرکت قطعات زنجیری اورست**

**EVEREST Chain Instruments Co. (LLC)**

*INDIAN HEKO (P) LTD*

*INDIAN CHAIN (P) LTD*



## شرکت قطعات زنجیری اورست

EVEREST Chain Instruments Co. (LLC)

شرکت قطعات زنجیری اورست (مسئولیت محدود) مشتخر است به نمایندگی انحصاری شرکت INDIAN CHAIN (P) LTD و همچنین نمایندگی انحصاری شرکت INDIAN HEKO (P) LTD از تامین کنندگان سطح یک شرکتهای FLSmidth و AUMUND و به همت اعضای خود که دارای بیش از بیست سال سابقه فعالیت حرفه‌ای در عرصه صنعت سیمان بوده اند، با هدف گردآوری، تمرکز توان و تجربه متخصصین خویش و در پاسخ به نیازهای فنی و تخصصی کارفرمایان محترم نسبت به تامین تجهیزات انتقال مواد خصوصاً زنجیر، کرپی و اتصالات زنجیری با بالاترین استاندارد بین‌المللی اقدام نماید.

شرکت INDIAN HEKO (P) LTD توسط کارخانه HEKO آلمان در شهر کلکته هند در سال ۱۸۹۰ میلادی پایه‌گذاری و به بهره‌برداری رسیده است و هم اکنون ۴۰٪ سهام این شرکت برای کارخانه HEKO آلمان بوده و محصولات تولیدی آن تحت لیسانس شرکت مادر و کیفیت مشابه و گاه‌اوقات فراتر داشته که تامین کننده عمده تقاضای صنعت سیمان هند (دومین تولیدکننده سیمان جهان) و صنعت سیمان روسیه و کشورهای مشترک المنافع CIS می‌باشد.

شرکت تجهیزات زنجیری اورست (مسئولیت محدود) آمادگی خود را در خصوص تامین موارد ذیل اعلام می‌دارد:

- ۱- کرپی الواتور صنعت سیمان - استانداردهای Long Pitch - DIN 745 - DIN 5699 - با بالاترین سطح کیفی در دنیا.
- ۲- زنجیر کششی الواتور صنعت سیمان - استانداردهای Round Link Chain - DIN 764 - DIN 766 - با بالاترین سطح کیفی در دنیا.
- ۳- انواع زنجیر FORGE و زنجیر انتقال مواد و زنجیرهای آویز(پرده) شامل: زنجیرهای مورد استفاده در سنگ شکن‌ها - زنجیرهای مورد استفاده در پری‌هیتر، کولر و بارگیرخانه و ...

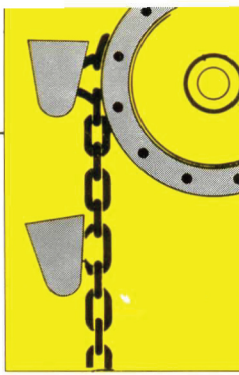
## تجهیزات زنجیری اورست (مسئولیت محدود)

EVEREST Chain Instruments (LLC)

INDIAN HEKO (P) LTD  
INDIAN CHAIN (P) LTD

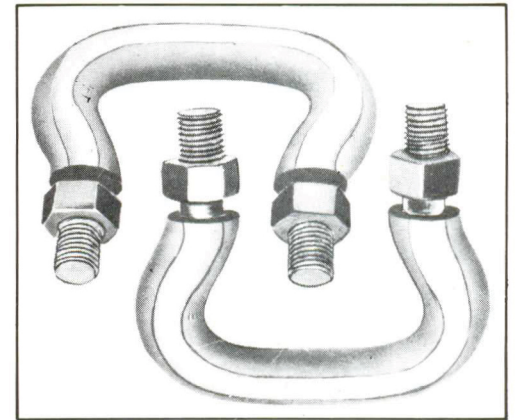
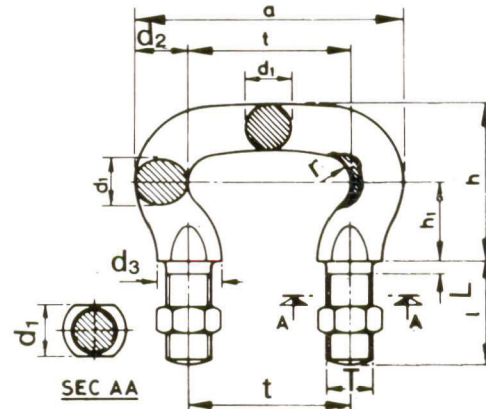
تهران، فلکه دوم صادقیه، مجتمع گل‌دیس،  
طبقه ۱۱ واحد ۱۱-۵ - کد پستی ۱۴۵۱۷۹۶۸۹۶  
۰۹۱۲۱۸۸۸۵۳۱ -۲۱-۴۴۲۸۲۳۵۷





# Chain Bows for Bucket Elevators

- Grade** : IC 55 RC
- Material** : Steel C45 as per IS 5517
- Process of Manufacture** : Solid Forged and Die Swaged
- Heat Treatment** : Hardened and Tempered all over to a strength of 1000-1200 N/mm<sup>2</sup>
- Special Crown Hardening** : Wearing points specially hardened to RC 55-60 (HV30 Min. - 600 Kp/mm<sup>2</sup>).
- Hardening Depth** : 0.1 d min.
- Mechanical Properties** : Proof Strength : 120 N/mm<sup>2</sup>  
Min Breaking Strength : 280 N/mm<sup>2</sup>
- Delivery Condition** : Chain Bows are supplied with Carbon Steel Distance Piece and a pair of Carbon Steel Hex Nuts, together with spring washers.
- Finish** : Black/Special Rust Preventive.



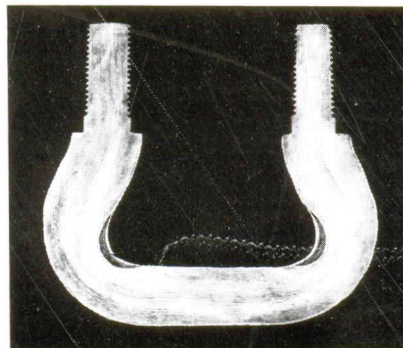
## AS PER DIN-745

t	a	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h	h <sub>1</sub>	l	L	r	T	Proof Load kN	Breaking Load kN	Appropriate Chain Size	Weight Each Kgs
56	92	15	18	19	50	25	32	8	9.5	12	50	112	13	0.36
63	105	18	21	23	60	30	40	8	10.5	16	63	142	16	0.50
70	116	20	23	28	68	34	45	10	12	20	80	176	18	0.80
80	132	23	26	31	74	37	45	10	13	20	100	230	20	1.00
91	149	26	29	34	86	43	55	12	14.5	24	126	300	23	1.70
105	172	30	34	38	100	50	55	12	17	24	170	395	26	2.20
126	206	36	40	44	118	59	70	16	20.5	30	250	570	30	3.80
147	239	42	46	50	136	68	70	16	23.5	30	340	775	36	5.30
147	239	42	46	50	136	68	85	16	23.5	36	340	775	36	6.50

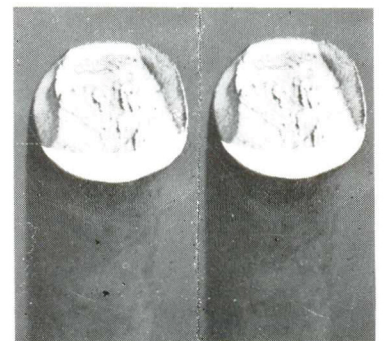
Dimensions in mm

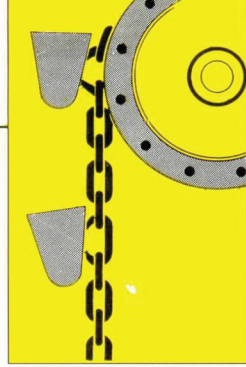
10 kN = 1.02 tonne

Microetching of the Chain Bow section shows uniform hardening depth all over the wearing area at the Crown.



A fractured structure of the Chain Bow Link clearly distinguishes the hardened area at the Crown and a Ductile Core structure.

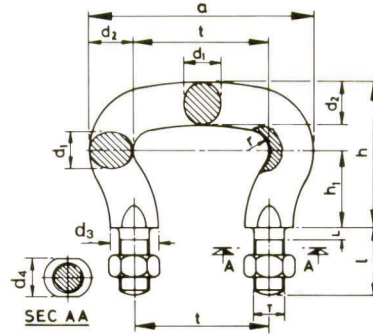
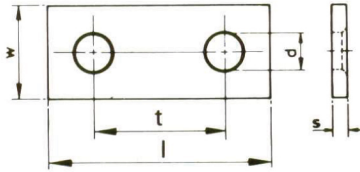




# Chain Bows for Bucket Elevators

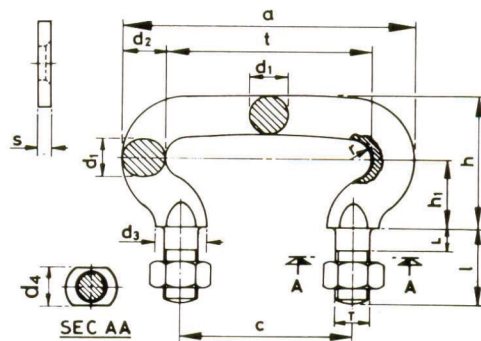
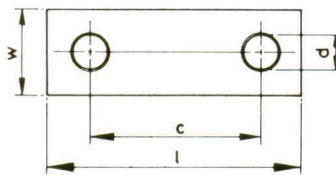
**DISTANCE PLATE FOR CHAIN BOWS  
AS PER DIN 745 AND DIN 5699**

t	l	w	s	d	kg
56	95	40	6	13	0.17
63	110	40	6	17	0.20
70	120	50	8	21	0.33
80	130	50	8	21	0.37
91	150	60	8	25	0.50
105	165	60	8	25	0.56
126	200	70	10	31	1.00
147	220	70	10	31	1.10
147	230	70	10	37	1.10



**AS PER DIN-5699**

t	a	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	h	h <sub>1</sub>	l	L	r	T	Proof Load kN	Breaking Load kN	Appropriate Chain Size mm	Weight Each kg
56	92	16	18	19	17	64	34	35	8	9.5	14	50	125	13	0.36
63	105	18	21	23	20	71	37	40	8	10.5	16	63	165	16	0.60
70	116	20	23	28	23	80	42	45	10	12.0	20	80	200	18	0.90
80	132	23	26	31	25	89	47	45	10	13.0	20	100	260	20	1.20
91	149	26	29	34	29	99	52	55	12	14.5	24	150	330	23	1.90
105	173	30	34	38	31	114	60	55	12	16.5	24	200	450	26	2.60
126	206	36	40	44	37	134	71	65	16	19.5	30	280	635	30	4.40
147	241	42	47	50	42	157	81	75	16	22.5	36	380	870	36	7.30



**DISTANCE PLATE FOR  
LONG PITCH BOW LINK**

c	l	w	s	d	kg
100	150	50	8	20.5	0.45
120	180	60	8	24.5	0.62
130	190	60	8	24.5	0.68
150	220	70	10	31	1.10
180	250	70	10	31	1.26
210	310	100	12	37	2.75

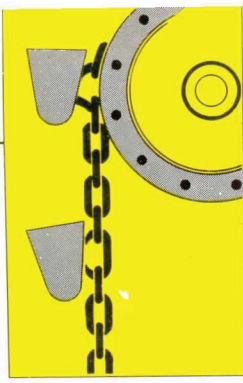
**LONG PITCH CHAIN BOWS**

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	t	c	h	h <sub>1</sub>	l	L	a	r	T	Proof Load kN	Breaking Load kN	Appropriate Chain Size mm	Weight Each kg
22	25	30	24	120	100	78	40	45	15	170	12	20	86	220	20	1.05
25	28	33	28	140	120	88	45	50	17	196	14	24	106	265	23	1.60
28	31	38	30	150	130	98	50	55	17	212	16	24	132	340	26	2.10
34	37	44	37	180	150	119	60	70	20	254	20	30	195	500	30	3.90
40	45	50	42	220	180	144	70	70	20	310	24	30	250	630	36	5.90
48	54	58	48	250	210	176	85	80	20	358	33	36	345	775	42	10.10

Dimensions in mm

10 kN = 1.02 tonne





# Alloy Steel Chains for Scraper Conveyors

**Grade :**

IC 60 RC Alloy

**Material :**

Nickel Chrome Moly Steel/ Nickel Moly Steel

**Process of Manufacture :**

Flash Butt Welded

**Heat Treatment :**

Gas Carburised, Double Quenched with Core Refining & Tempered

**Case Depth :**

$0.08d \pm 0.01d$

**Skin Hardness :**

RC 60-64 (HV30 Min. - 720 Kp/mm<sup>2</sup>)

**Mechanical Properties :**

Proof Strength : 150 N/mm<sup>2</sup>

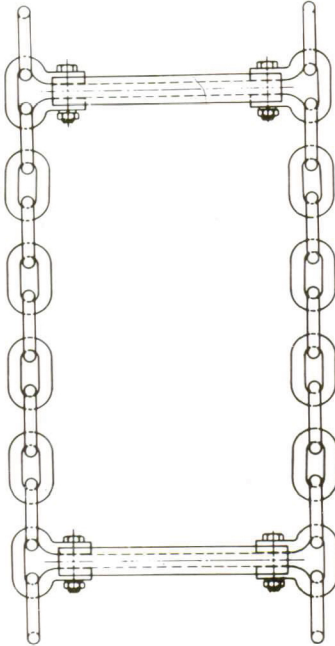
Breaking Strength : 300 N/mm<sup>2</sup>

**Delivery Condition :**

Chains are calibrated and supplied in matched pairs.

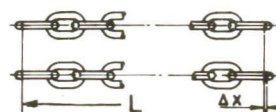
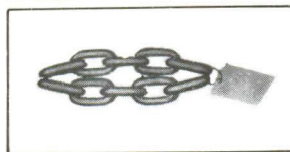
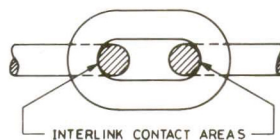
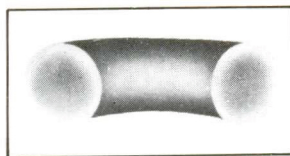
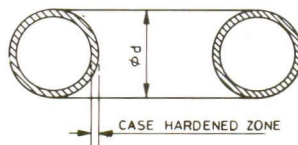
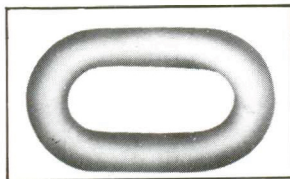
**Finish :**

Black/Special Rust Preventive

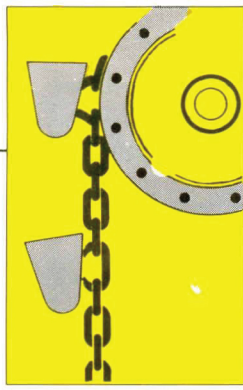


Nominal Size	Pitch	Outside Width	Safe Working Load	Proof Load	Minimum Breaking Load	Weight per meter
d	t	w	kN	kN	kN	kg/m
18	63	60	40	80	160	6.5
20	70	67	50	100	200	8.6
22	86	74	60	120	240	9.7
26	92	86	80	160	315	13.7

*Dimensions in mm*

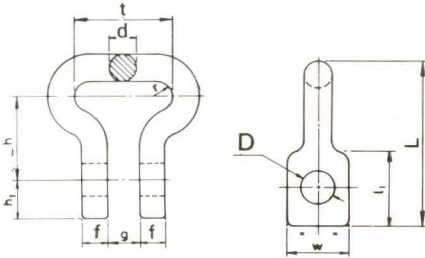


1. Gas Carburising ensures uniform case depth all over the link. Use of fine grained steel prevents grain growth. Chains are double quenched and tempered to achieve high surface hardness of 60-64 HRC as well as high core toughness.
2. Fracture structure of the finished chain shows a ductile core with high surface hardness of 60-64 HRC. The contact areas of the link are ensured to have high hardness and optimum wear resistance for longer life of the chains.
3. Chains are calibrated to close tolerances in calibrating machine. They are then supplied in matched pairs. ( $\Delta x = \pm 0.1\%$  of L)



## Flat Head Chain Shackle for Scraper Conveyor

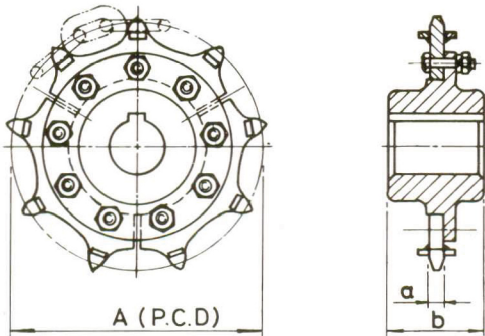
Chain Shackles are manufactured from fine grained C45 Steel by Drop Forging. The Scraper bar is fixed between the opening of the shackle with the help of High Tensile bolt & nut. The Shackles are heat treated to a strength of 100-120 kg/mm<sup>2</sup> all over the surface. The wearing points at the crown are hardened by special method to a hardness of RC 54-60 and depth of 1.5-2.0 mm. They are subjected to proof and Breaking loads as per the size of the corresponding chain.



Nominal Chain Size d x t	t	d	h	h <sub>1</sub>	f	g	L	w	r	D	Weight each kg.
18 x 64	64	18	56	26	16	22	110	41	12	21	0.8
20 x 70	70	20	85	26	20	22	144	43	13.5	21	1.0
22 x 86	86	22	89	28	22	24	153	48	15	25	1.25
26 x 91	91	26	95	30	26	28	168	52	17.5	25	2.25

## CHAIN WHEELS

TOOTHED CHAIN WHEELS are suitable for drive with calibrated round link steel chains in Scraper Conveyors. The toothed sprocket made of high quality steel are bolted to the C I Hub. The Sprocket is carburised to a case depth of 1.5 to 2.0 mm and hardened to RC 55-60 for long life. The Sprocket is supplied in segments, thus making it convenient to replace them at site without removing the Chain Wheel.

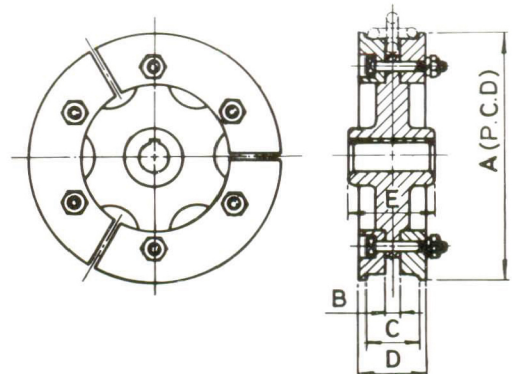


Chain Size			A (P.C.D.)	No. of Teeth	a	b
Dia	Pitch	Outside Width				
16	56	54	323	9	19	100
18	63	60	363	9	21	120
20	70	67	403	9	24	120
23	80	77	461	9	27	120
26	91	87	525	9	31	130
30	105	101	605	9	37	150
36	126	122	726	9	45	180

NON TOOTHED CHAIN WHEELS made of three parts used with chains and Shackles for Bucket Elevator Drive. Pair of steel rings made of high quality steel are bolted to the central C.I.Hub. Steel rings are carburised to a case depth to 1.5 to 2.0 mm and hardened to RC 55-60 for long life. The rings are supplied in segments, thus making it convenient to replace them at site without removing the chain wheel.

Chain Size			A (P.C.D.)	B	C	D	E
Dia	Pitch	Outside Width					
16	56	54	323	20	58	66	100
18	63	60	363	23	66	76	120
20	70	67	403	26	74	84	120
23	80	77	461	28	84	94	120
26	91	87	525	32	96	106	130
30	105	101	605	36	110	122	150
36	126	122	726	42	132	144	180

Dimensions in mm





## 2.0 HEKO round link chains

**HEKO chains distinguish themselves through:**

- **high quality heat treatment tailored to particular applications**
- **high fatigue strength**
- **close length tolerance of chain pairs**

Modern welding machines are employed for the manufacture of HEKO chains.

Chains are manufactured from a wide range of materials including manganese steels, chrome-nickel steels and fine grain chrome-nickel-molybdenum alloy steels.

Our own, modern, computer-controlled heat treatment processes produce tempered or case hardened chains.

## 2.1 Heat treatment



**Figure 2:**  
Part view of the HEKO hardening shop



**Figure 3:**  
Cross section through the length of a chain link

**HEKO case hardening means:**

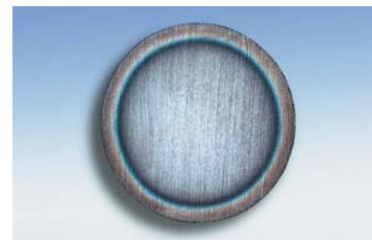
- **High breaking load resulting from a tough, fine grain core**
- **High wear resistance resulting from a surface hardness in excess of 800 HV**

Case hardening results in a hard, wear resistant chain shell. HEKO offers 6 hardening depths as standard. In addition HEKO offers various hardening depths to suit individual requirements. A surface hardness of at least 800 HV is supplied as standard.

**HEKO tempered means:**

- **very high breaking loads**

For applications where a high breaking load is taking precedence over hardness, tempered round link chains manufactured from manganese steel, or CrNi or CrNiMo alloy steel are recommended.



**Figure 4:**  
Cross section through the diameter of a chain link

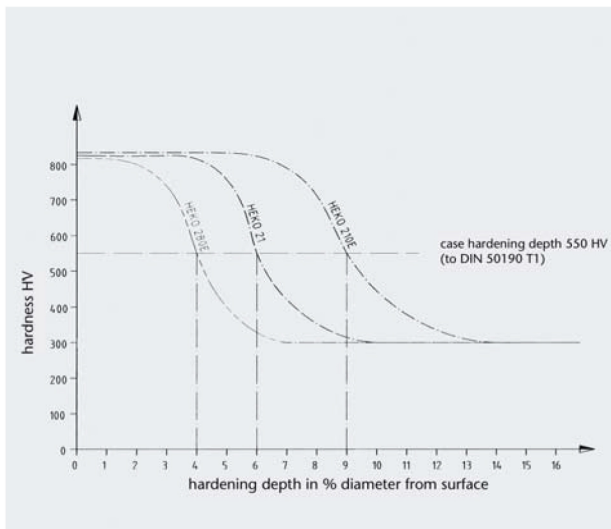
## 2.2 Technical data for round link chains

**Table 1: Technical data for HEKO qualities**

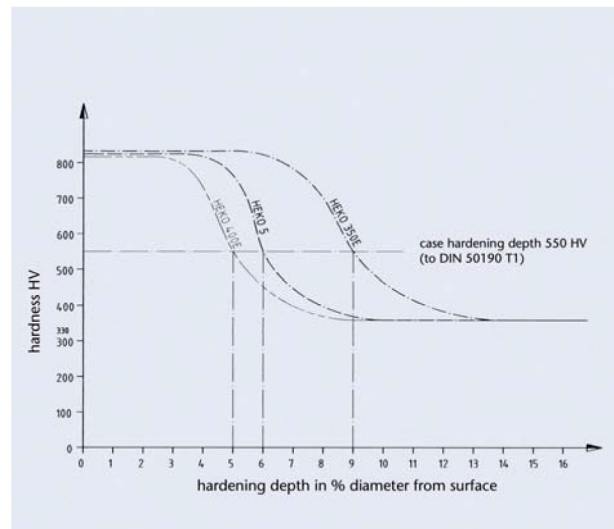
	case hardened qualities manganese steel			case hardened qualities CrNi/ CrNiMo steel		
	HEKO 280E	HEKO 21	HEKO 210E	HEKO 400E	HEKO 5	HEKO 350E
proof stress N/mm <sup>2</sup>	140	125	105	240	150	210
breaking stress N/mm <sup>2</sup>	280 <sub>1)</sub>	250	210 <sub>1)</sub>	400 <sub>1)</sub>	370 <sub>6)</sub>	350 <sub>1)</sub>
contact surface hardness min. joint HV 30	800	800	800	800	800	800
case hardening depth ...d +/-0,01 d after etching	0,07	0,10	0,14 <sub>2)</sub>	0,09	0,10	0,14 <sub>2)</sub>
case hardening depth ...d min. Eht 550	0,04	0,06 <sub>3)</sub>	0,09 <sub>4)</sub>	0,05	0,06 <sub>3)</sub>	0,09 <sub>4)</sub>
<b>product characteristic</b>						
low abrasion	●			●		
medium abrasion		●		●	●	
strong abrasiveness			●			●
<b>dynamic load</b>						
light			●			●
medium		●			●	
heavy	●			●	●	

1) tolerance 10%  
3)  $\geq 30$  mm  $\varnothing = 0,05$  d  
5) Eht = case hardening depth

2) 30 mm  $\varnothing = 0,12$  d, 36-42 mm  $\varnothing = 0,11$  d  
4) 30 mm  $\varnothing = 0,08$  d, 36-42 mm  $\varnothing = 0,07$  d  
6)  $\geq 30$  mm  $\varnothing =$  tolerance 20%



**Figure 5 :**  
Hardness curves for HEKO chains of  
special manganese chain steel



**Figure 6:**  
Hardness curves for HEKO chains of  
chromium-nickel and chromium-nickel-  
molybdenum alloy steels

## 2.3 Dimensions and technical data for round link chains

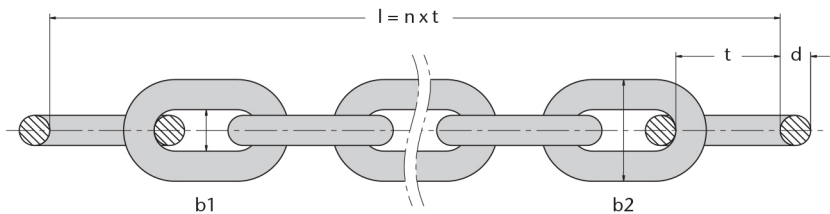


Figure 7: Dimensions for round link chains

Table 2: Dimensions and qualities

Dimensions / nominal dia. x pitch d x t (mm)	DIN chain	weight kg/m	b1 inside width min. (mm)	b2 outside width max. (mm)	case hardened HEKO qualities		210 E MBK kN	400 E MBK kN	5 MBK kN	350 E MBK kN
					280 E MBK kN	21 MBK kN				
10 x 28,0	766	2,3	12,0	36,0	44	39	33	63	58	55
10 x 35,0	764	2,0	14,0	36,0	44	39	33	63	58	55
13 x 45,0	764	3,5	18,0	47,0	74	66	56	106	98	93
14 x 50,0	WN	4,1	16,3	47,0	86	77	65	123	114	108
16 x 45,0	766	5,8	19,2	58,0	112	100	84	160	148	140
16 x 56,0	764	5,2	22,0	58,0	112	100	84	160	148	140
16 x 64,0	WN	5,1	20,0	55,0	112	100	84	160	148	140
18 x 50,0	766	7,4	21,6	65,0	142	127	107	204	188	178
18 x 63,0	764	6,5	24,0	65,0	142	127	107	204	188	178
19 x 75,0	WN	7,6	22,0	63,0	158	141	119	227	210	198
20 x 56,0	766	9,0	24,0	72,0	175	157	132	251	232	220
20 x 70,0	764	8,2	27,0	72,0	175	157	132	251	232	220
22 x 86,0	WN	9,8	26,0	74,0	212	190	160	304	281	266
23 x 64,0	766	12,0	27,6	83,0	232	207	174	332	307	290
23 x 80,0	764	11,0	31,0	83,0	232	207	174	332	307	290
26 x 73,0	766	15,0	31,2	94,0	298	265	223	425	392	371
26 x 91,0	764	14,0	35,0	94,0	298	265	223	425	392	371
26 x 100,0	WN	13,5	31,0	87,0	298	265	223	425	392	371
28 x 78,0	766	18,0	33,6	101,0	344	308	258	492	455	431
28 x 98,0	764	16,5	36,0	101,0	344	308	258	492	455	431
30 x 84,0	766	20,0	36,0	108,0	395	353	296	565	523	494
30 x 105,0	764	19,0	39,0	108,0	395	353	296	565	523	494
30 x 120,0	WN	17,8	36,0	102,0	395	353	296	565	523	494
33 x 92,0	766	25,0	43,0	119,0	478	427	359	684	633	598
33 x 115,0	764	22,5	43,0	119,0	478	427	359	684	633	598
34 x 136,0	WN	23,8	39,0	113,0	508	453	381	726	672	635
36 x 101,0	766	29,0	43,2	130,0	570	508	428	814	753	712
36 x 126,0	764	26,5	47,0	130,0	570	508	428	814	753	712
38 x 144,0	WN	30,0	44,0	127,0	635	567	476	907	839	794
39 x 109,0	766	34,0	51,0	140,0	669	597	502	956	884	836
39 x 136,0	764	31,0	51,0	140,0	669	597	502	956	884	836
42 x 118,0	766	40,0	50,0	151,0	776	692	582	1108	1025	970
42 x 147,0	764	36,0	55,0	151,0	776	692	582	1108	1025	970

MBK = min. breaking load, WN = works standard, d = diameter, t = pitch, other dimensions and qualities on request, including stainless steel and other alloys. Matching of chains and wheels is essential for trouble free operation.

# 3.0 HEKO bucket attachments

## HEKO attachments

- the right solution for every application
- several options to suit individual requirements
- finish self-colour, galvanised or other surface finishes

HEKO offers a wide spectrum of cost effective and safe attachments for elevators. HEKO's attachments are suitable for double-strand elevators. The heat treatment of the attachments will be effected individually to the requirements. There is a choice between different hardened qualities.

Generally the conveying chains can be supplied as single components or pre-mounted endless chain strands. We will be pleased to assist you in selecting the optimum attachment for your application.

## 3.1 Technical data for bucket elevator attachments

Table 3: Technical data for HEKO qualities

	Hardened contact area qualities		CrMo-steel	Case hardened qualities CrNi-steel
	Heat treatable steel	CrMo-steel		
	HEKO 4/1	HEKO 4/2	HEKO 6	HEKO 5
proof stress N/mm <sup>2</sup>	125	240	240	150
breaking stress N/mm <sup>2</sup>	280	400	400	370 <sub>4)</sub>
contact surface hardness min. joint HV 1	600	600	600	750
hardening depth d min. after etching	0,1 <sub>1)</sub>	0,1 <sub>1)</sub>	0,14 <sub>1)</sub>	0,1 <sub>1)</sub>
hardening depth d min. Eht <sub>2)</sub> Rht <sub>3)</sub> 550 HV 1	0,06	0,06	0,09	0,06

1) tolerance ...d 0,01 d      2) Eht = case hardened depth  
 3) Rht = effective hardening depth      4) tolerance - 10% ≥ t=105 = -20%

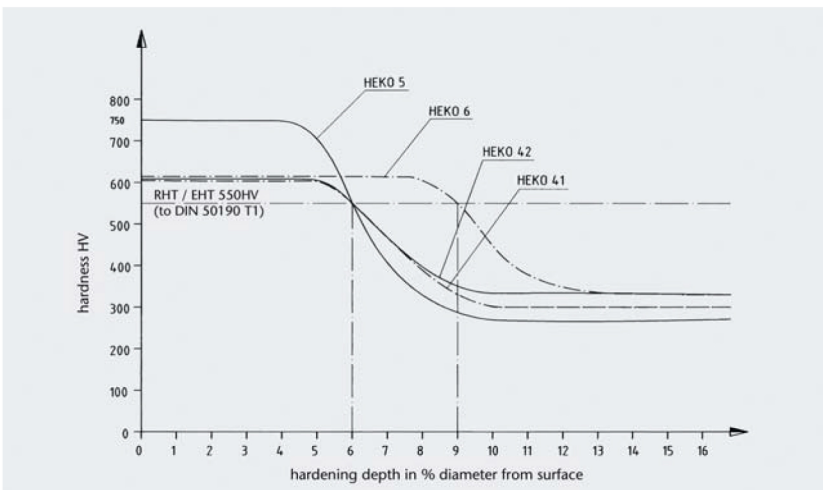


Figure 8 :  
Hardness curves for bucket attachments



Figure 9:  
Automatic hardness tester (Protocolling of hardness values and hardness curve)



## 3.2 Chain shackles type TS/TS-N/TS-L

Chain shackles type TS / TS-N / TS-L are suitable as bucket attachments for all duties. The shackles are tempered and induction hardened in the contact areas to a hardening depth of at least  $0.14 \times d$ .

Shackles type TS and TS-N can be used with pocket teeth and projecting teeth and toothless chain wheels. Assembly and dismounting of the shackle is possible at any time when using spring pins for the fastening of the closing plates split pins are available optionally.

### Advantages of the TS-Shackles compared to DIN-Shackles

- Locked distance plate, therefore uninterrupted force transmission
- Higher breaking load
- Larger contact surface
- Lower wear
- Easier assembly/dis-assembly
- Interchangeable with shackle to DIN 5699
- Elimination of chain tension onto bucket and other parts

- Eliminating alternating load and thus avoiding fatigue fracture of shackle

- Supplied loose or pre-fitted with chain to form endless chain strand

- Suitable for chains to DIN 764/766 and works standard

Regarding high loads the chain pitch can be equal to the shackle pitch, regarding high capacity buckets we recommend the TS-L shackle.



Figure 10: HEKO chain shackle type TS

The TS type is recommended for use as a horizontal attachment, i.e. mostly buckets with side wall attachment. The forged distance plate incorporates an additional support on the chain wheel. Both toothed and toothless wheels can be used with the TS-Shackle.



Figure 11: HEKO chain shackle type TS-N

The TS-N type, though primarily used for vertical attachment, i.e. rear wall mounted buckets. It has the same properties as the TS-Shackle, the only difference being the use of a plain, fabricated distance plate which is more cost effective.



Figure 12: HEKO chain shackle type TS-L

The TS-L type is recommended for vertical attachment and high turning moments as imposed by wider and deeper buckets, i.e. high capacity buckets, and buckets over 630mm width. An extended distance plate provides an additional support and extends the supporting centres over three chain pitches. The additional support ensures smoother operation under high loads and reduces wear. Due to the higher load capability, chain and shackle pitch can be the same even with high capacity buckets. The TS-L Shackle only benefits a vertical bucket attachment.

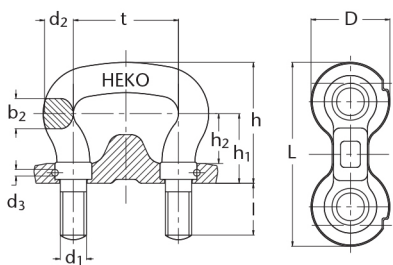


Figure 13:  
HEKO shackle type TS

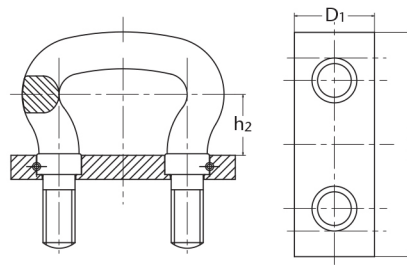


Figure 14:  
HEKO shackle type TS-N

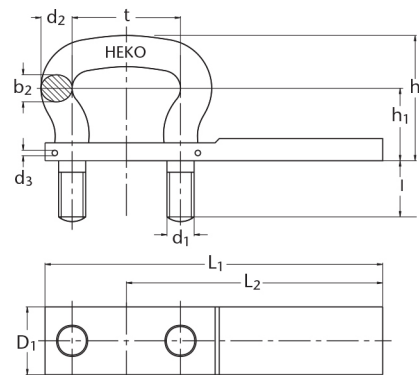


Figure 15:  
HEKO shackle type TS-L

**Table 4: Dimensions and qualities of HEKO shackle type TS, TS-N and TS-L**

pitch t/mm	to suit chain, nominal diameter d/mm	DIN	weight kg/each complete		dimensions in mm											HEKO quality hardened (0,14 x d) HEKO 6 MBK (kN)
			TS	TS-L	b <sub>2</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>1</sub>	h	h <sub>1</sub>	D	L	L <sub>1</sub>	L <sub>2</sub>	l	
45	13	764/766	0,53	0,86	14	14	5	M 12	64,5	40,5	37	75	150	112,5	26	106
56	16	762/764/766/WN	0,70	1,20	16	16	5	M 14	68	40	45	95	190	142,5	28	160
	16	762/764														
63	18	764/766	1,00	1,60	18	18	5	M 16	74	43	50	110	210	155	34	220
	18	764														
70	20	762/764/766	1,45	2,20	20	20	5	M 20	83	48	55	120	235	175	37	280
	20	764														
80	23	764/766/WN	1,85	3,10	23	23	5	M 20	92	53	60	130	265	170	37	360
	23	764														
91	26	764/766/WN	2,70	4,30	26	26	6	M 24	104	60	70	155	300	222,5	42	450
	26	764														
105	30	764/766/WN	3,90	6,20	30	30	6	M 24	118	68	80	165	345	262,5	42	630
	30	764														
126	34	WN	6,10	9,70	35	35	8	M 30	139	81	85	200	415	315	66	860
	36	764/766														
	36	764														
136	39	764/766	7,60	11,60	39	38	8	M 36	152	88	90	220	450	340	79	955
	39	764/766														
147	44	764/766	9,00	13,60	40	40	8	M 36	162	93	95	230	480	365	79	1160

MBK = min. breaking load, t = pitch, d = diameter Chain pitch and shackle pitch must be the same when using toothed chain wheels  
Toothless wheels may be used with un-matching chain and shackle pitch.

### 3.3 Endless chain system type TS, TS-N and TS-L



**Figure 16:**  
HEKO endless chain systems with shackle type TS, -TS-N and -TS-L

A further advantage of HEKO's endless chain strands is that toothed wheels are not required when the chain load provides sufficient friction grip, which applies in most cases.

#### Advantages of HEKO endless chain strands

- Pre-assembled chain strands in lengths to suit client's requirements
- Minimised erection time as complete strands can be pulled into the elevator
- Easy dis-assembly/shortening as split pins can be removed quickly
- Chain locks are not required
- Full load can be applied to the strands without attaching buckets

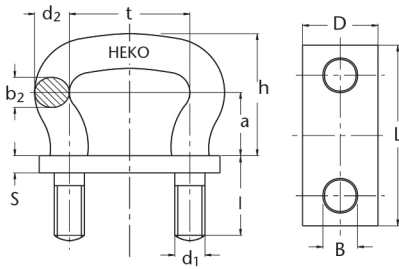
Increased service life as well as reduced investment and operation costs result. Correct selection of components, fitting and operation can eliminate chain slip in most cases, without excess tensioning via the idling wheel.



**Figure 17:**  
quick and simple assembly of a HEKO endless chain strand

The increased contact area provided, after the initial running-in period by the chain and shackle, leads to reduced wear when compared to other types of attachments.

# 3.4 Chain shackles to type DIN 5699 and type DIN 745



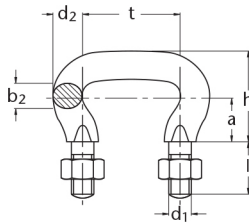
**Figure 18:**  
HEKO shackle to type DIN 5699

- Simple to fit
- For chain to DIN 764/766 and works standard
- Suitable for toothed wheels with equal chain pitch, otherwise use toothless wheels
- Shackles must only be used with distance plate and safety element to secure nut

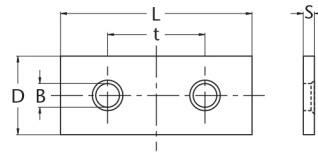
**Table 5: Dimensions and qualities of HEKO shackles to DIN 5699**

pitch t/mm	to suit chain, chain wheel		weight kg/each shackle with nuts	plate	chain shackles dimensions in mm								HEKO qualities induction hardened				
	toothed d/mm	toothless d/mm-DIN			b <sub>2</sub>	d <sub>2</sub>	d <sub>1</sub>	h	a	l	L	D	S	B	HEKO41 MBK (kN)	HEKO5 MBK (kN)	
35	10 x 35	10-764	10-766	0,14	0,07	10	12	M 10	43	23	25	65	30	5	10,5	54	68
45	13 x 45	10/13-764	13-766	0,26	0,08	13	15	M 12	53	28	30	75	30	5	13	88	110
56	16 x 56	13/16-764	16-766	0,43	0,17	16	18	M 14	64	34	35	95	40	6	15	129	162
63	18 x 63	16/18-764	16/18-766	0,63	0,20	18	21	M 16	71	37	40	110	40	6	17	170	213
70	20 x 70	18/20-764	18/20-766	0,97	0,25	20	23	M 20	80	42	45	120	50	6	21	207	259
80	23 x 80	20/23-764	20/23-766	1,26	0,28	23	26	M 20	89	47	45	130	50	6	21	269	337
91	26 x 91	23/26-764	23/26-766	1,85	0,50	26	29	M 24	99	52	55	150	60	8	25	339	424
105	30 x 105	26/30-764	26/30-766	2,50	0,56	30	34	M 24	114	60	55	165	60	8	25	458	574
126	36 x 126	30/36-764	30/36-766	4,25	1,00	36	40	M 30	134	71	65	200	70	10	31	646	810
136	39 x 136	36/39-764	36/39-766	6,48	1,46	39	44	M 36	146	76	75	220	80	12	37	771	950
147	42 x 147	39/42-764	39/42-766	7,08	1,53	42	47	M 36	157	81	75	230	80	12	37	887	1110

MBK = min. breaking load, t = pitch, d = diameter, chain pitch and shackle pitch must be the same when using toothed chain wheels, regarding toothless wheels the shackle size may be bigger than the chain size. Remark Page 34. Tolerances as per table 3



**Figure 19:**  
HEKO shackle to type DIN 745



**Figure 20:**  
HEKO distance plate for shackle to type  
DIN 5699 and DIN 745

**Table 6: Dimensions and qualities of HEKO shackles to DIN 745**

pitch t/mm	to suit chain, chain wheel		weight kg/each shackle with nuts	plate	chain shackles dimensions in mm								HEKO qualities induction hardened				
	toothed d/mm	toothless d/mm-DIN			b <sub>2</sub>	d <sub>2</sub>	d <sub>1</sub>	h	a	l	L	D	S	B	HEKO41 MBK (kN)	HEKO5 MBK (kN)	
45	13 x 45	10-764	10-766	0,19	0,08	11,5	14	M 10	40	20	25	75	30	5	10,5	76	98
56	16 x 56	13/16-764	13-766	0,39	0,17	15	18	M 12	50	25	32	95	40	6	13	115	149
63	18 x 63	16/18-764	16-766	0,67	0,20	18	21	M 16	60	30	40	110	40	6	17	145	188
70	20 x 70	18/20-764	18/20-766	1,03	0,25	20	23	M 20	68	34	45	120	50	6	21	179	232
80	23 x 80	20/23-764	20/23-766	1,26	0,28	23	26	M 20	74	37	45	130	50	6	21	237	307
91	26 x 91	23/26-764	23/26-766	2,03	0,50	26	29	M 24	86	43	55	150	60	8	25	303	393
105	30 x 105	26/30-764	26/30-766	2,60	0,56	30	34	M 24	100	50	55	165	60	8	25	403	523
126	36 x 126	30/36-764	30/36-766	4,42	1,00	36	40	M 30	118	59	70	200	70	10	31	580	753
147	42 x 147	36/39-764	36/39-766	6,07	1,10	42	46	M 30	136	68	70	220	70	10	31	790	1025
147	42 x 147	39/42-764	39/42-766	7,33	1,53	42	46	M 36	136	68	85	230	80	12	37	790	1025

MBK = min. breaking load, t = pitch, d = diameter, chain pitch and shackle pitch must be the same when using toothed chain wheels, regarding toothless wheels the shackle size may be bigger than the chain size. Remark Page 34. Tolerances as per table 3



## 3.5 Chain shackle type S

- Simple to fit
- For chain to DIN 764/766 and works standard
- Suitable for toothed wheels with equal chain pitch, otherwise use toothless wheels
- Shackles must only be used with distance plate and safety element to secure nut

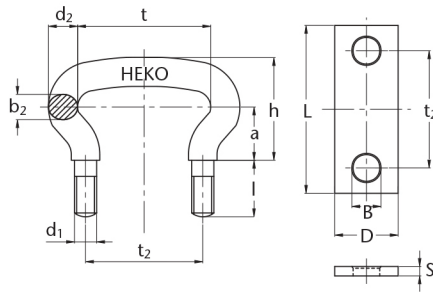


Figure 21:  
HEKO chain shackle type S



Table 7: Dimensions and qualities of HEKO shackles type S

pitch t/mm	to suit chain, DIN 764		weight kg/each shackle plate with 2 nuts	chain shackles dimensions in mm													HEKO quality induction hardened HEKO41 MBK (kN)
	DIN 766	DIN 766		t <sub>2</sub>	b <sub>2</sub>	d <sub>2</sub>	d <sub>1</sub>	h	a	l	L	D	S	B			
75	13 x 45	13 x 36	0,30	0,19	65	15	15	M 12	50	25	30	105	40	6	13	160	
90	16 x 56	16 x 45	0,54	0,21	80	18	18	M 16	60	30	35	120	40	6	17	170	
120	20 x 70	20 x 56	1,11	0,43	100	22	25	M 20	78	40	45	150	50	8	21	340	
140	23 x 80	23 x 64	1,80	0,62	120	25	29	M 24	88	45	50	180	60	8	25	380	
150	26 x 91	26 x 73	2,21	0,77	130	28	31	M 24	98	50	55	190	70	8	25	430	
180	30 x 105	30 x 84	3,89	1,26	150	34	37	M 30	119	60	70	220	80	10	31	600	
220	36 x 126	36 x 101	6,41	1,84	180	40	45	M 30	144	70	70	250	100	10	31	730	
240	39 x 136	39 x 109	8,47	2,43	200	45	50	M 36	165	80	75	280	100	12	37	840	
250	42 x 147	42 x 118	10,30	3,30	210	48	54	M 36	176	85	80	310	120	12	37	930	

MBK = min. breaking load, t = pitch, d = diameter, other dimensions and executions on request



EVEREST Chain Instruments Co. (LLC)

شرکت قطعات زنجیری اورست

EVEREST Chain Instruments Co. (LLC)

تهران، فلکه دوم صادقیه، مجتمع گلدیس،  
طبقه ۱۱ واحد ۱۱۰۵ - کد پستی ۱۴۵۱۷۹۶۸۹۶  
۰۹۱۳۱۸۸۸۵۳۱                      ۰۲۱-۴۴۲۸۲۳۵۷