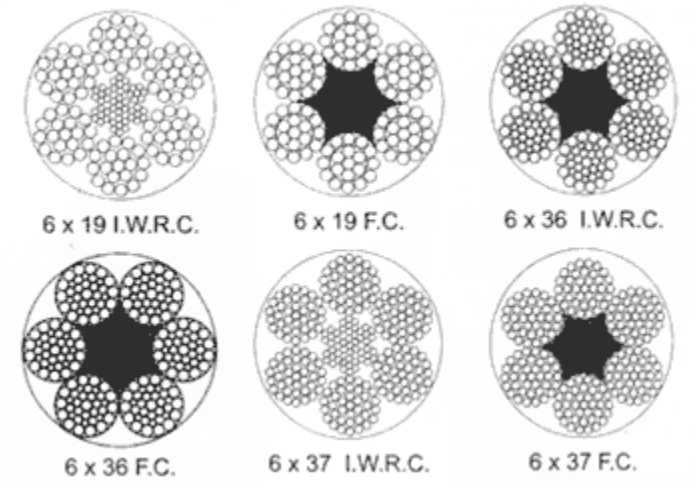
LIFTING TACKLES PRODUCTS:

WIRE ROPES:

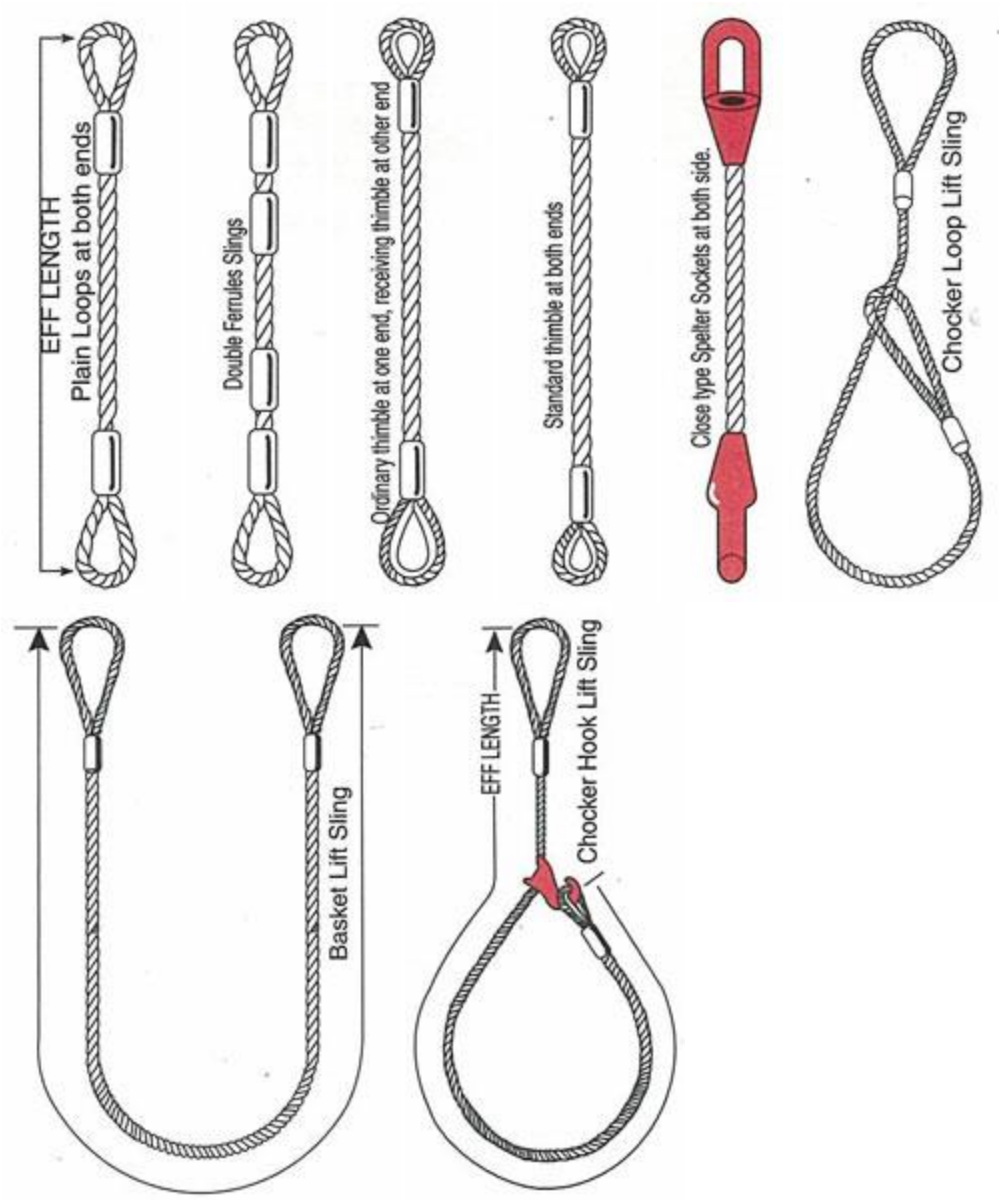
There are various formats of wire ropes, with the basic division on construction of the ropes. The two main variants are:

1. IWRC (Inner Wire Rope Core) - In this wire rope, there is no core within the strands of the wire rope, and hence, elasticity is less, at the same time, strength is higher, because of complete steel being used.
2. FMC (Fibre Main Core) – in this wire rope, fibre rope is the core within the strands of the wire rope. The elasticity and bending capacity of this wire is more, however, the strength and load lifting capacity is less than that of IWRC.

Below is a snapshot of the dissection view of these constructions, with various strand strength combinations viz:- 6X19, 6X37, 6X36 etc (6X37 would be 6 main strands with each strand having 37 wires, making one strand):



Similarly the wires can have various uses, basis the way the prepared, either with loop or to be used in basket, with hand or aluminum ferrule splicing. Some of the photos below will descript their usage.



Wire ropes, are available in all brands (Usha Martin, local and imported) and various sizes. Below is a chart of sizes with their capacities.

DIA(MM)	MASS KG/100 MTR		MIN. BREAKING		MIN. BREAKING		MASS KG/100 MTR		MIN. BREAKING	
	6X19 & 6X37		LOAD-KN 6X19		LOAD-KN 6X37		6X36		LOAD-KN 6X36	
	FMC	IWRC	FMC	IWRC	FMC	IWRC	FMC	IWRC	FMC	IWRC
6	12.5	13.7	20	21	21	23				51
8	22.1	24.4	35	37.8	33	36				63
9	28	30.8	44	47.5	42	46	30.8	33.9	47	76
10	34.6	38.1	54	58.3	52	56	38	41.8	58	92
11	41.9	46.1	66	71.3	63	68	46	50.6	71	106
12	49.8	54.8	78	84.2	75	81	54.7	60.2	84	124
13	58.5	64.4	92	99.4	88	95	64.3	70.7	99	142
14	67.8	74.6	107	116	102	110	74.5	82	114	161
15	77.8	85.6	122	132	117	127	85.5	94	131	204
16	88.6	97.4	139	150	134	144	97.3	107	149	228
18	112	123	176	190	169	183	123	135	189	252
19	125	137	196	212	188	203	137	151	211	305
20	138	152	218	235	209	225	152	167	234	363
22	167	184	263	284	253	273	184	202	283	394
24	199	219	313	338	301	325	219	241	336	426
25	216	238	340	367	326	352	238	261	365	494
26	234	257	368	397	353	381	257	283	395	567
28	271	298	426	461	409	442	298	328	458	646
30	312	343	490	529	470	507	342	376	526	729
32	354	390	557	602	534	577	389	428	598	772
34	400	440	629	679	603	651	440	484	675	817
35	424	466	666	719	639	690	466	512	715	911
36	448	493	705	761	676	730	493	542	757	1009
38	500	550	786	848	754	813	549	604	843	1112
40	554	609	870	940	835	902	608	669	934	1220
42	611	672	959	1036	920	994	670	738	1030	1333
44	670	737	1053	1137	1010	1091	736	810	1130	1452
46	733	805	1151	1243	1104	1192	805	885	1235	1575
48	798	877	1253	1353	1202	1298	876	964	1345	1704
50	865	951	1360	1468	1304	1409	950	1046	1459	
52	936	1029	1471	1588	1411	1524	1028	1131	1578	

POLYESTER WEBBING SLING/ BELTS PP ROPE SLINGS

Polyester Webbing Sling/ lifting belts

Our large range of different brands of polyester webbing slings made from the best polyester yarn, and are manufactured to the best standard. The process of manufacturing takes into account the sensitive and important nature of functions to which these will be put to use.

Types of polyester webbing slings :

Simplex Webbing Slings

These are made of single layer of webbing with reinforced eye loops at both ends. These are preferred for their wider load bearing surface

Duplex Webbing Slings

These are made of two layers of webbing with reinforced eye loops at both ends. These have normal lifting usage and application

Triplex / Quadraplex Webbing Slings

These are made of three / four layers of webbing with reinforced eye loops at both ends. These are used to lift heavy loads

Webbing Slings :

(As per EN1492-1 Standards)

Vertical straight lift	colour	Width	choker	Basket	Basket 45o	Basket 90o
1 Ton	Violet	25 mm	800 kg	2,000 kg	1,800 kg	1,400 kg
2 Ton	Green	50 mm	1,600 kg	4,000 kg	3,600 kg	2,800 kg
3 Ton	Yellow	75 mm	2,400 kg	6,000 kg	5,400 kg	4,200 kg
4 Ton	Grey	100 mm	3,200 kg	8,000 kg	7,200 kg	5,600 kg
5 Ton	Red	125 mm	4,000 kg	10,000 kg	9,000 kg	7,000 kg
6 Ton	Brown	150 mm	4,800 kg	12,000 kg	10,800 kg	8,400 kg
8 Ton	Blue	200 mm	6,400 kg	16,000 kg	14,400 kg	11,200 kg
10 Ton	Orange	250 mm	8,000	20,000	18,000 kg	14,000 kg

			kg	kg		
12 Ton	Orange	300 mm	9,600 kg	24,000 kg	21,600 kg	16,800 kg
15 Ton	Orange	250 mm 3 ply	12,000 kg	30,000 kg	27,000 kg	21,000 kg
20 Ton	Orange	250 mm 4 ply	16,000 kg	40,000 kg	36,000 kg	28,000 kg
24 Ton	Orange	300 mm 4 ply	19,200 kg	48,000 kg	43,200 kg	33,600 kg

The polyester round slings are manufactured by using finest quality polyester yarn that is hank wound continuously in the form of endless and is enclosed in a protective cover. Available in the lifting capacity range of up to 200 tons. These round slings are available in color coded form for easy identification.

Features :

- No particular point of wear & tear and completely adaptable
- Larger factor of safety
- Light in weight
- Non Corrosive
- Economical
- Well balanced to pick loads

Round Endless Slings :

(As per EN1491-2 Standards)

This system is best used for securing heavy cargo on a transport mode like, trailer, barge etc. The Ratchet Lashing system is used for securing cargo on these modes of transport by holding it with some element of elasticity for jurks avoiding damage to the material. It is a modern, light weight and thoroughly reliable method of securing all types of load across an entire spectrum of requirements. It offers great advantages over any other securing system.

Ratchet Lashing is a Reusable, Cost effective tie-down using polyester webbing & Ratchet Buckle and has replaced other lifting equipments like, ropes, chains etc that are used for transportation. The Ratchet Buckle provides the tensioning force. The tension is uniform and locking mechanism ensures that the tension is retained till it is unlocked.

Vertical straight lift	Colour	Sling Width	Choker	Basket	Basket 45o	Basket 90o
1 Ton	Violet	32 mm	800 kg	2,000 kg	1,800 kg	1,400 kg
2 Ton	Green	32 mm	1,600 kg	4,000 kg	3,600 kg	2,800 kg
3 Ton	Yellow	35 mm	2,400 kg	6,000 kg	5,400 kg	4,200 kg
4 Ton	Grey	35 mm	3,200 kg	8,000 kg	7,200 kg	5,600 kg
5 Ton	Red	48 mm	4,000 kg	10,000 kg	9,000 kg	7,000 kg
6 Ton	Brown	48 mm	4,800 kg	12,000 kg	10,800 kg	8,400 kg
8 Ton	Blue	48 mm	6,400 kg	16,000 kg	14,400 kg	11,200 kg
10 Ton	Orange	48 mm	8,000 kg	20,000 kg	18,000 kg	14,000 kg
12 Ton	Orange	80 mm	9,600 kg	24,000 kg	21,600 kg	16,800 kg
15 Ton	Orange	80 mm	12,000 kg	30,000 kg	27,000 kg	21,000 kg
20 Ton	Orange	80 mm	16,000 kg	40,000 kg	36,000 kg	28,000 kg
30 Ton	Orange	96 mm	24,000 kg	60,000 kg	54,000 kg	42,000 kg
50 Ton	Orange	120 mm	40,000 kg	1,00,000 kg	90,000 kg	70,000 kg

Features :

- High Tenacity Polyester webbing has a high resistance to abrasion - much higher than its polypropylene / Nylon equivalent
- Unique identification number is marked on, all for traceability and safety.
- Age does not play a role for weakning of the Ratchet.
- Absorb jurks, such that material damage is avoided.
- No hidden corrosion – Physical check can identify damage.
- Less risk of damage to the load or to painted / Coated surfaces.
- Supply - can adapt to fit the load easily thereby reducing the chances of damage.
- Easy and quick to use, saving time and thus saving costs

Woven polyester lashing (WPL) is used to secure cargo. These are manufactured in form of webbing from very high tenacity polyester yarn. They replace conventional load restraint products like steel strapping, wire ropes, chains, ratchet straps etc & also reduces the use of dunnage woods. The webbing structure of woven lashing makes it easy to use & hence enhances the performance of users.

Polyester woven lashing is closed by various types of buckles

FEATURES :

- As tough as steel
- Light weght
- Jurk absorbent
- No corrosion
- High Cross directional strength
- Retensionable
- Farewell in all weather condition
- No damage to the finished surface of goods

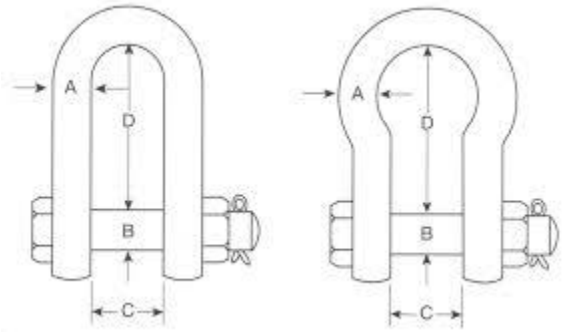
SHACKLES

Bow & Dee Shackles of nut bolt type pin, round pin or with screw, eye & collar of various sizes are available. Material used is either Mild Steel or Alloy steel with varying hardness. The shackles can be either galvanized on ungalvanised, based on user requirements.

All shackles comply with ISS standards for size specification of body, pin and jaw opening.

SAFE WORKING LOAD in TONNES	DIA BOW	DIA PIN	INSIDE WIDTH	INSIDE CHAIN TYPE	LENGTH ANCHOR TYPE	WIDTH OF BOW	APPROX. WEIGHT	
							EACH (Kg)	
	D	d	a	c	c	2r	SCREW PIN	SAFETY PIN
0.33	5	6	10	27	22	16.5	0.03	
0.5	6	8	12		28	20	0.05	0.055
0.75	8	10	13		31	21	0.08	0.1
1	10	11	16	31	36	26	0.14	0.17
1.5	11	13	18	37	43	29	0.19	0.24
2	13	16	22	43	51	32	0.34	0.38
3.25	16	19	26	51	64	43	0.63	0.7

4.75	19	22	31	59	76	51	0.95	1
6.5	22	25	36	73	83	58	1.55	1.7
8.5	25	28	43	85	95	68	2.3	2.6
9.5	28	32	47	90	108	75	3.24	3.8
12	32	35	51	94	115	83	4.4	4.8
13.5	35	38	57	115	133	92	6	7
17	38	42	60	127	146	99	7.5	8.5
25	45	50	74	149	178	126	14	16
35	50	57	83	171	197	146	18.9	21
55	65	70	105	203	254	185	37.15	42
85	75	80	127	230	330	190		69
120	89	95	146	267	381	238		120
150	102	108	165		400	275		160
200	120	130	175		500	290		235
250	125	140	200		540	305		285



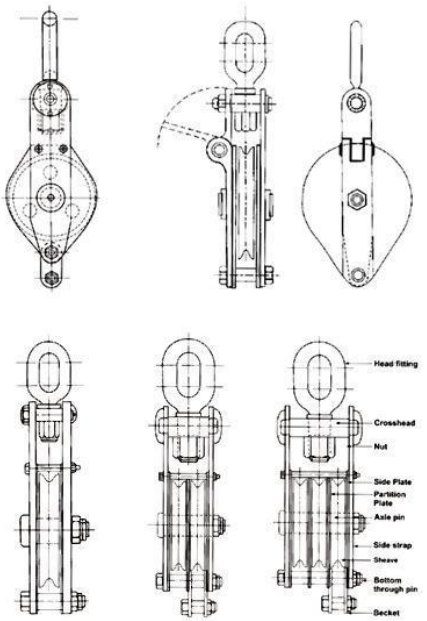
WIRE ROPE PULLEY BLOCKS:

Wire pulley blocks with single and multiple sheaves in either mild or alloy steel are available. The pulley blocks are of superior quality with Gun Metal bushing, with swivel of fixed hook or eye on top.

A General Idea Indicating The Safe Working Loads of wire rope blocks:

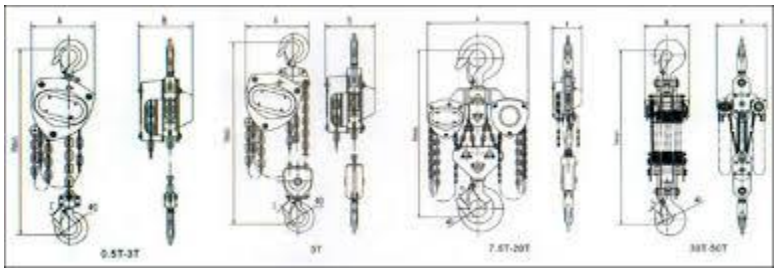
Dia of Sheave Circf. of Rope		6” 1”-1¼”	7” 1¼”-1½”	8” 1½”-1¾”	10” 1¾”-2¼”	12” 2¼”-2½”	14” 2½”-3”	16” 3”-3½”	18” 3½”-4”
S.W. L. tons	Single Sheave	0.75	1.5	2	3	5	6	7	10
	Double Sheave	1	2	3	5	8	10	15	20
	Triple Sheave	1.5	2.5	5	10	12	15	20	25

We even customize wire rope blocks to the customer’s requirements, wherein basis usage and load requirement, special designed wire rope blocks are manufactured.


Head fitting
Crosshead
Nut
Side Plate
Partition Plate
Axle pin
Side strap
Sheave
Bottom through pin
Becket

CHAIN PULLEY BLOCKS AND OVERHEAD TROLLEYS:

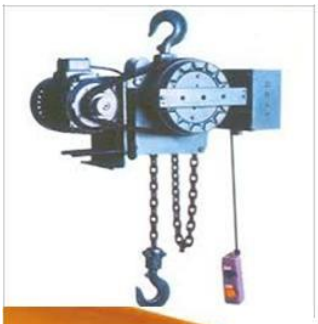
Imported and domestic chain pulley blocks, with compressed gear technology, help lifting weight from 1 to 25 tonnes. The loose chain can be single or multiple fall lift. In domestic we provide brands like speed, indef and so on.



Key features of chain pulley blocks provided by us are:

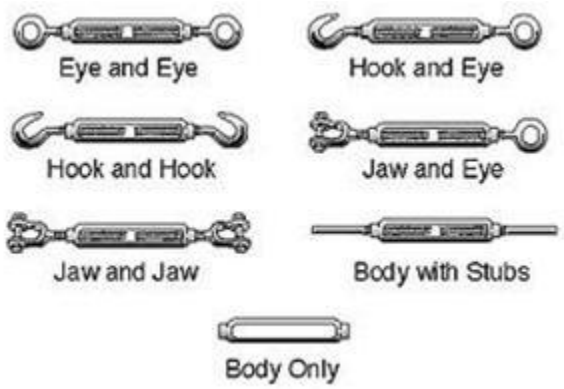
- Automatic double pawl breaking system.
- Double cover protection
- Light weight and robust construction.
- Low effort to lift maximum load.
- Extra thick friction discs.
- Completely forged hooks with safety latch as per standard are used.
- Alloy steel Grade 80 chain.
- Zinc plated hand chains
- Sealed bearings
- Built in overload protective device
- Test certificate accompanied with each piece.

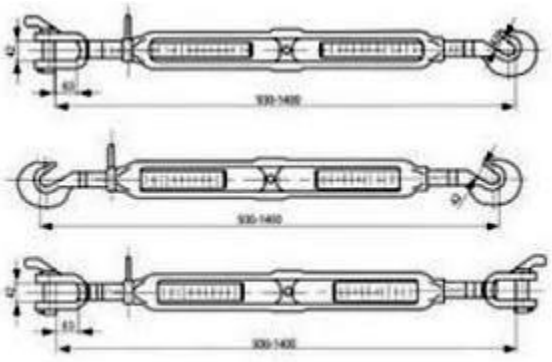
Chain pulley blocks, with motor for lifting can be customized and delivered on requirement. Similarly speed and imported brand overhead moving trolleys are available.



TURN BUCKLES & BOTTLE SCREWS:

Turn Buckles and bottle screw (ragging screw) in superior mild or alloy steel are available. Threading and body are as per specified standards, and availability of eye, hook, jaw etc, on either or both sides of the buckle is possible.





Turnbuckle assembly combinations include: Eye and Eye, Hook and Hook, Hook and Eye, Jaw and Jaw, Jaw and Eye. They are:

- End fittings are Quenched and Tempered, bodies heat treated by normalizing.
- Our Quenched and Tempered end fittings and normalized bodies have enhanced impact properties for greater toughness at all temperatures.
- Option of galvanisation is available.
- Hooks are forged with a greater cross sectional area that results in a stronger hook with better usage properties.
- Modified UNJ thread on end fittings for improved fatigue properties. Body has UNC threads.
- Turnbuckle eyes are forged elongated, by design, to maximize easy attachment in system and minimize stress in the eye. For turnbuckle sizes 1/4" through 2-1/2 ", a shackle one size smaller can be reeved through eye.
- TURNBUCKLES RECOMMENDED FOR STRAIGHT OR IN-LINE PULL ONLY.
- Lock Nuts available for all sizes.
- Typical hardness levels, Tensile Strengths and Ductility Properties are available for all sizes.

CHAIN SLINGS

Chain slings are required where job is rough and there are no options for elasticity. Alloy steel chain slings are often used when operating under high temperatures or rough and rugged conditions that would damage or destroy other types of slings. They are flexible, durable and long lasting, ductile, easy to inspect, collapsible for convenient storage, and will adhere securely to the contours of a load. Although chain will show little or no stretch at rated capacity, it does have the ability to elongate up to 20% prior to failure. This elongation may serve as a visual warning sign prompting users to remove the sling from service before injury or damage is sustained from a broken chain sling. Perhaps the most advantageous feature of a chain sling is its ability to be repaired. Nearly any damaged component discovered during an inspection can be repaired and restored to useful condition. During the repair process, slings will be refurbished, proof tested and recertified, offering an economical alternative to new chain sling replacements.

Chain slings used for overhead lifting applications must be manufactured from alloy steel. Alloy chain, commonly 8600 series alloy, is subjected to quality control techniques surpassing those applied to lower grades of chain and is designed, approved and specifically recommended for overhead lifting. Alloy steel chains possess the strength, chemical content and mechanical properties necessary to meet government and industry standards. These specifications prescribe minimum elongation values, minimum proof test values, recommended working load limits and minimum statistical breaking strengths. Alloy chain can be distinguished from other popular grades of welded chain through its hallmark, or identification code, which is embossed into chain links approximately every 12" to 18". Grade 80 (or System 8) is the most frequently used alloy chain and carries a hallmark similar to Campbell Chain Company's "CA8" or "C8". A new, maximum strength Grade 100 (or System 10) alloy is manufactured by Campbell Chain with a "C10" hallmark for easy identification. Do not use any chain sling for overhead lifting before verifying that it is constructed of alloy steel. Different "Types" of chain slings can be fabricated and are usually designated by a three character symbol, based upon the number of legs and types of components used in the assembly:

Chain slings can be manufactured using permanent, welded coupling links, or if preferred, mechanical coupling links for quicker "in the field" assemblies. Either way, the sling must have an attached identification tag providing the grade, size, reach, type of sling, working load limit at a specific angle of lift, and serial number. Relative to other types of slings, chain slings have the poorest strength/weight ratio, best abrasion and cut resistance, average elongation and shock resistance, best flexibility, and best resistance to high temperatures.

Follow the following instructions while selecting Chain Slings.

1) Double branch slings:

For all angles between branches from 0-90° (0-45° to the vertical)

WLL = 1.4 x WLL of a single branch made from similar chain.

When additional marked for angles between branches of 90-120° (45-60 to the vertical)

WLL = 1 xWLL of a single branch made from similar chain.

2) Three and Four branch slings:

For all angles between branches from 0-90° (0-45° to the vertical)

Four Branch

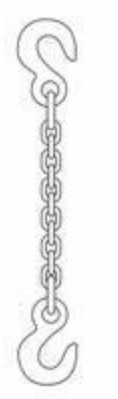
WLL = 2.1 x WLL of a single branch made from similar chain.

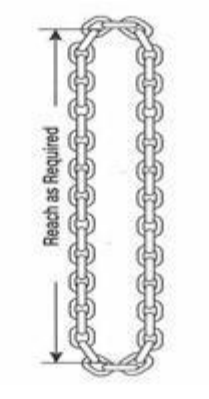
When additional marked for angles between branches of 90-120° (45-60° to the vertical)

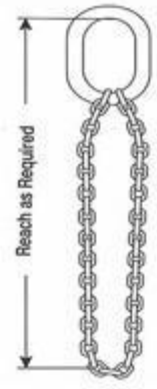
Three Branch

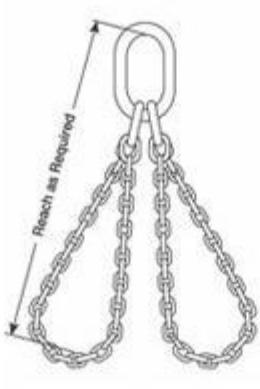
WLL= 1.5 x WLL of a single branch made from similar chain.

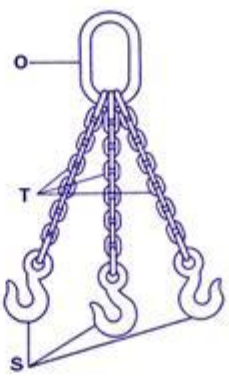
Note: In the case of a three branch sling the angle between branches shall be taken as twice to angle to the vertical, that is 2 x single leg capacity.

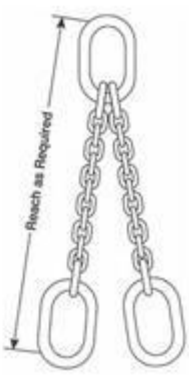












ALTERNATIVELY CONSIDER THE FOLLOWING METHOD:

A) For two leg (branch) slings multiply the capacity of single leg sling by 1.4 to obtain SWL of two legs at a included angle 90°.

Table determining the SWL of 2 legs of given chain dia.

Single Leg chain say Multiply by SWL of 2 Legs

12mm grade T. (80) x is 7 tons

SWL 5 Tons > 1.4 = at 90° angle

B) For 4 leg (branch) slings multiply the capacity of single leg sling by 2.1 to obtain SWL of two legs at a included angle 90°.

Single Leg chain say Multiply by SWL 3 or 4 Legs

16mm grade T. (80) x is 16.8 tons

SWL 8 Tons > 2.1 = at 90° angle

CHAIN SLING CHART

Nominal Size *dn*	Working Load (SWL) for Endless Chain Slings			
	L	M	S	T
6	0.75	0.90	1.50	1.87
7.1	0.94	1.20	1.87	2.40
8.0	1.20	1.50	2.40	3.0
9.0	1.50	1.87	3.0	3.75
10.0	1.87	2.40	3.75	4.80
11	2.4	3.0	4.8	6.0
12	3.0	3.75	6.0	7.5
14	3.75	4.8	7.5	9.45
16	4.8	6.0	9.45	12.0
18	6.0	7.50	12.0	15.0
20	7.5	9.45	15.0	18.75
22	9.45	12.0	18.75	24.0
25	12.0	15.0	24.0	30.0
28	15.0	18.75	30.0	37.50
32	18.75	24.0	37.50	48.0
36	24.0	30.0	48.0	60.0
40	30.0	37.50	60.0	75.0
45	37.50	48.0	75.0	94.50

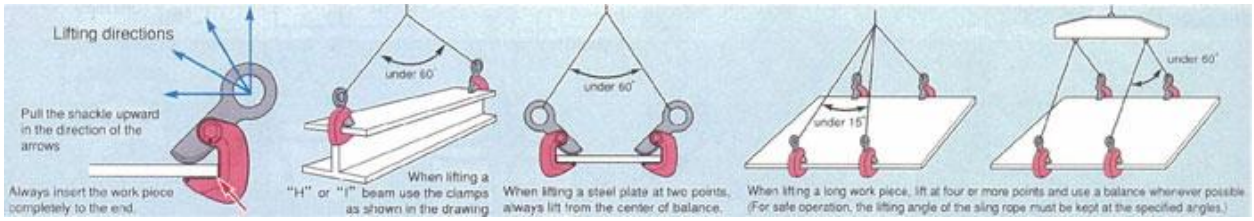
L=Grade-30, M=Grade-40, S=Grade-63, T=Grade-80

LIFTING CLAMPS

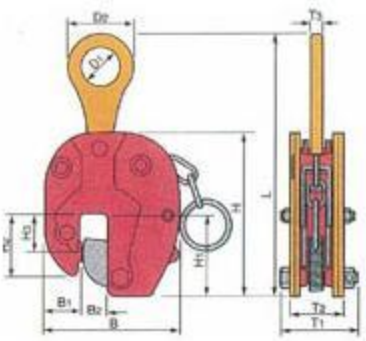
Horizontal Lifting Clamps:

Horizontal lifting clamps are either single used or used in sets; to pick odd size and heavy cargo like, plates etc. it has the following features:

- The spring -loaded tightening lock mechanism assures a positive initial clamping force.
- The Clamping force increases in proportion with the weight of the load.
- The main body and the shackle are made of die-forged special alloy steels, which are optimally tempered for maximum strength and durability.
- High-frequency quenching of die-forged special alloy steels gives greater durability to the clamp.
- The main body is a baked-on finish.
- The clamp body can be easily checked for deformation by measuring the safety points.

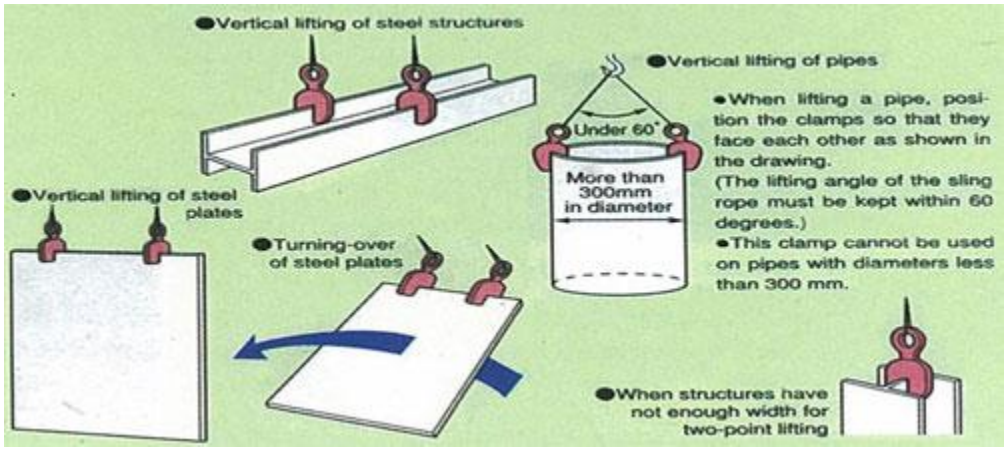


Vertical Lifting Clamps



Similar to horizontal vertical lifting clamps are used to pick where cargo is vertical odd sized and heavy, the following are some of the features

- The spring -loaded tightening look mechanism assures a positive initial clamping force.
- The Clamping force increases in proportion to the weight of the load.
- The main body and the shackle are made of die-forged special alloy steels, which are optimally tempered for maximum strength and durability.
- High-frequency quenching of die-forged special alloy steels gives greater durability to the clamp.
- The main body is a baked-on finish.



OTHER LIFTING TACKLES

1. Hooks
   Different types of hooks, eye hook, swivel hook, with safety latch etc.



2. Eye Bolts
   Eye bolt with various thread size, with or without nut, and with collar



3. Swivel
   Forged swivel or swivel with bearing, and fitted with other gear like hook etc.






4. Oblong links, Rings, Connecting links