SAFETY ADVICE

To use clamps safely

More than 90% of clamp accidents are caused by incorrect handling or use.
Special attention is required when the work is familiar or clamps become old.
For your own safety, read the following precautions carefully, and be careful not to use clamps improperly and dangerously.

Precautions common to every type of clamp

❶ Check loads before working

Fig. 1

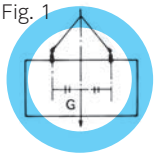
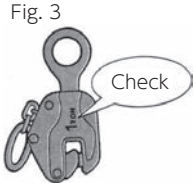


Fig. 2

- Check the weight of a load and its center of gravity. (Fig. 1)
- When lifting long materials, take special care to calculate the center of gravity in the lateral (side to side) direction. If you do not, it is dangerous. (Fig. 2)
- If oil or water is found on the load, be sure to wipe it off.

❷ Use clamps suitable for the working conditions.

Fig. 3



- Select clamps according to the mechanism and capacity suitable for the load.
- Be sure to use clamps within the maximum working load and effective thickness limits. (Fig. 3)
- It is dangerous to lift a load whose thickness exceeds the maximum specified thickness.
- It is dangerous to lift a load whose weight exceeds the working load limit.
- When lifting loads whose surface is slippery due to oil, paint, etc., use new clamps.
- If the load is very light, use clamps for lifting lightweight loads.
- When lifting loads in a diagonal direction, use all-direction screw clamps SBB and SBN. (Fig. 4)
- When lifting long materials vertically (length more than 10 times the width), also use Models SBB and SBN. (Fig. 5)
- Do not use clamps instead of hooks.
- Never use clamps if they have been subjected to an impact load.

Fig. 4

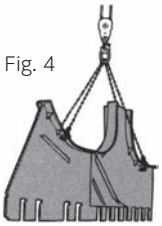
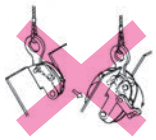


Fig. 5

❸ Checking and precautions when attaching clamps

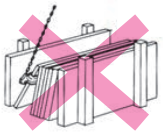
Fig. 6

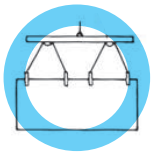


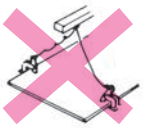
- Determine the position to attach clamps so that the lever (or latch) on the locking device will not touch the wire, chain, lifting shackle, or other objects when lifting or lowering. (Fig. 6)
- Make sure clamps are attached at positions higher than the center of gravity of objects.
- Make sure objects are fully inserted into clamps.
- Make sure that the locking device (latch or lever) has been engaged securely.
- Always determine positions for attachment taking into account where the load will be set down. Loads which are unstable especially when set down are dangerous.

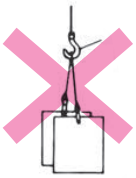
To be inserted fully

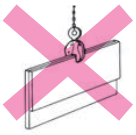
❹ Precautions and forbidden items for work











- It is dangerous when steel plates which are to be placed in a vertical position are clamped from the side and raised.
- When lifting one steel plate using at least three clamps, pay special attention to unbalanced loading. Also be careful because there are cases where either clamp will have no load. In this case, use a balance, block loader, etc.
- Use proper lifting wires and chains. Before lifting, check for twists or kinks.
- Be sure to use clamps only for lifting in an appropriate direction for the clamp.
- It is dangerous to lift several different objects using separate clamps suspended from one hook.
- It is dangerous to lift more than one steel plate with one clamp.

❺ Precautions when lowering and setting down

- Pay attention to an impact load when turning over an object.
- Operate a crane slowly so that a great impact is not given to clamps.
- When objects to be lifted have a shape such as shown in the drawing, be sure to use blocks to prevent them from toppling over.
- Special care should be taken not to allow clamps which have been removed from an object to strike the object.

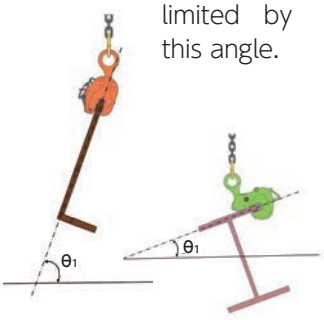
SAFETY ADVICE

Sling angles of clamps

Depending on the working conditions of the clamps, the following angles and their limits should be observed.

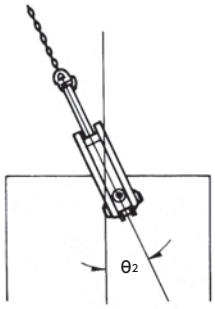
Clamping angle θ1

When the object is lifted and the clamp main body is viewed from the side, the clamping angle is the angle at which the center line of the opening section intersects the horizontal line. The load that can be lifted is limited by this angle.



Mounting angle θ2

When a clamp is attached to an object or the object is lifted, the mounting angle is the angle at which a line at right angles to the edge of the object intersects the center line of the thickness of the clamp main body.



Diagonal angle θ3

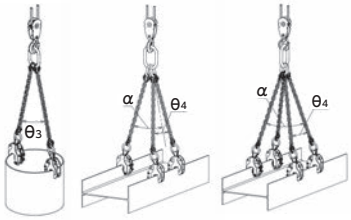
Angle at which wire ropes or chains intersect when an object is lifted

Sling width angle θ4

In three-point and four-point lifting, angle at which the clamp positions are close to each other

Maximum lifting angle α

In three-point lifting, it should be a “diagonal angle”.
In four-point lifting, it should be an “angle in a diagonal direction”.



Tilt angle of an object to be lifted θ5

When clamps are used in a row in the right conditions, the angle of the edge or upper side of the object is the tilt angle.

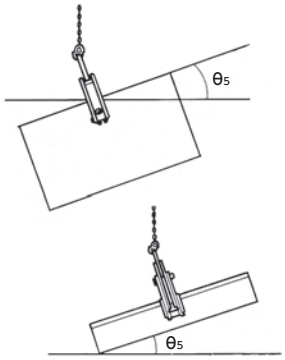


Table of sling angles by type

The following table shows the sling angle limits (maximum) by type and by model. For safety while working, please work within the allowable range.

Type		Model	Clamping angle θ1	Mounting angle θ2	Diagonal angle θ3	Sling width angle θ4	Tilt angle of the object to be lifted θ5	Diagonal angle in 3-point lifting Angle in a diagonal direction in 4-point lifting α
Vertical lifting clamps		E、SL、RS、WOL、ET	45～135	0±5	60	60	30	60
		SLT、RST	45～135	0±5	60	60	30	60
		NE、NNE、NNEII、NNEII L	45～135	0±5	60	20	10	60
		NEC	45～135	0±5	60	20	10	60
Lateral lifting clamps		G、GT、GC、GD、GL、AMS、VAR、AMN	0～45	0±5	60	30	15	60
		VA、VAS、VAN、VANL	0～45	0±5	30	30	15	30
		BMB、GNE	0～30	0±5	60	20	10	60
Horizontal lifting clamps		HO、HOW、HOS	−15～0	0±5	30～60	30	5	30～60
		VAF、VAFS	−15～5	0±5	60	30	5	60
		EH、FHA	0	0±5	60	30	5	–
Screw clamps		SBB、SBb、SBN	−90～90	0±5	60	60	90	60
Special clamps	For bulb plates	BCR、BCL	45～135	0±5	60	30	15	60
	For sheet pilings	SP	–	0±2.5	60	30	90	60
		PE	90±5	0±5	60	30	15	60
	For columns	CCV	90±5	0±5	60	30	15	–
		CCL	0±5	0±5	60	30	15	–
	For pipes	KH、PCL	90±5	0±5	60	30	45	–
	For drums	DL	90±5	0±5	60	30	15	–
		DLW、DLWO	90±5	0±2.5	30	30	5	–
		DLV、DLVL	–	–	–	–	–	–
	For rails	RCA、RCAL	45～90	0±5	60	30	15	–
Hole lifting jigs		LSC	90	0±45	60	60	45	–

⚠ **If a clamping angle of -90° is used, there is a danger that the clamp may come off due to its own weight in a no-load condition.**

* For clamps and details that are not listed in the table above, refer to each instruction manual.