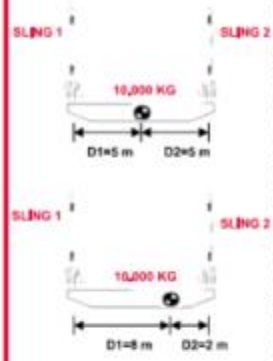
Rigging Information

CENTER OF GRAVITY AND SLING LOADING



WHEN LIFTING VERTICALLY, THE LOAD WILL BE SHARED EQUALLY IF THE CENTER OF GRAVITY IS PLACED EQUALLY BETWEEN THE PICK POINTS. IF THE WEIGHT OF LOAD IS 10,000 KG, THEN EACH SLING WILL HAVE A LOAD OF 5,000KG AND EACH SHACKLE AND EYEBOLT WILL ALSO HAVE A LOAD OF 5,000 KG.

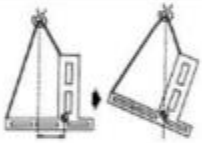
WHEN THE CENTER OF GRAVITY IS NOT EQUALLY SPACED BETWEEN THE PICK POINTS, THE SLINGS AND FITTINGS WILL NOT CARRY AN EQUAL SHARE OF THE LOAD. THE SLING CONNECTED TO THE PICK POINT CLOSEST TO THE CENTER OF GRAVITY WILL CARRY THE GREATEST SHARE OF THE LOAD.

SLING 2 IS CLOSEST TO COG. IT WILL HAVE THE GREATEST SHARE OF THE LOAD.

SLING 2 : 10,000 X 8 / (8 + 2) = 8,000 KG
SLING 1 : 10,000 X 2 / (8 + 2) = 2,000 KG

LOAD STABILITY AND THE CENTER OF GRAVITY

CONNECTION TO THE LOAD MUST BE MADE ABOVE THE CENTER OF GRAVITY. IF NOT, THE LOAD IS UNSTABLE AND WILL SHIFT. KEEP DISTANCE FROM COG TO SLING AS LARGE AS POSSIBLE.

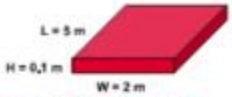


CALCULATE WEIGHT

9

EXAMPLE - FLATS

WEIGHT = L X W X H X UNIT WEIGHT



IF STEEL: UNIT WEIGHT = 7,85 t/m³
WEIGHT = 5 m X 2 m X 0,1 m X 7,85 t/m³ =7,85 t

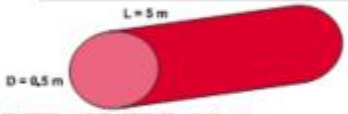
IF ALUMINUM: UNIT WEIGHT = 2,64 t/m³
WEIGHT = 5 m X 2 m X 0,1 m X 2,64 t/m³ = 2,64 t

IF CONCRETE: UNIT WEIGHT = 2,40 t/m³
WEIGHT = 5 m X 2 m X 0,1 m X 2,40 t/m³ = 2,40 t

CALCULATE WEIGHT

EXAMPLE - SOLID CYLINDER

WEIGHT = $\frac{3,14 \times D^2}{4}$ X L X UNIT WEIGHT



IF STEEL: UNIT WEIGHT = 7,85 t/m³
WEIGHT = $\frac{3,14 \times 0,5^2}{4}$ X 5 m X 7,85 t/m³ =7,70 t

IF CONCRETE: UNIT WEIGHT = 2,40 t/m³
WEIGHT = $\frac{3,14 \times 0,5^2}{4}$ X 5 m X 2,40 t/m³ =2,35 t

HITCHES

10

WIRE ROPE, CHAIN AND SYNTHETIC SLINGS

WIRE ROPE SLINGS AND CONNECTIONS TO FITTINGS

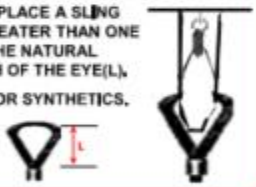
USE A THIMBLE TO PROTECT SLING AND TO INCREASE D/d RATIO.

NEVER PLACE EYE OVER A FITTING WITH A SMALLER DIAMETER OR WIDTH THAN THE ROPE'S DIAMETER.

WIRE ROPE SLINGS AND CONNECTIONS TO FITTINGS

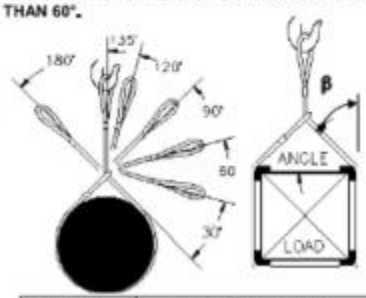
NEVER PLACE A SLING EYE GREATER THAN ONE HALF THE NATURAL LENGTH OF THE EYE(L).

1/3(L) FOR SYNTHETICS.



CHOKER HITCHES

A CHOKER HITCH HAS 80% OF THE CAPACITY OF A SINGLE LEG ONLY IF THE CORNERS ARE SOFTENED AND THE VERTICAL SLING ANGLE β IS SMALLER THAN 60°.
USE BLOCKS TO PREVENT ANGLES GREATER THAN 60°.



ANGLE OF CHOKE	SLING RATED LOAD PERCENTAGE OF SINGLE LEG SLING CAPACITY
120° - 180°	80%
90° - 119°	65%
60° - 89°	55%
30° - 59°	40%

BASKET HITCH

A BASKET HITCH HAS TWICE THE CAPACITY OF A SINGLE LEG ONLY IF THE D/d RATIO ≥ 25/1 AND LEGS OF SLING ARE VERTICAL.

AT OTHER ANGLES, SEE TABLE.

ANGLE β	PERCENTAGE OF SINGLE LEG CAPACITY
0	200%
30	170%
45	140%
60	100%