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CONTAINER SECURING SYSTEM

Lashing
Solution

MINATO SEIKI



Container Lashing System

Since the year 1985, TAIYO developed Semi-Automatic Twistlock Model : NA-7 as world's first which was revolutionary products in the container lashing fields.

In 1990, approximately a half of technical patents concerned with container lashing devices belongs to TAIYO which means we are the leading company of container lashing devices in the world.

In 2005, we developed the Fully Automatic Twistlock Model : FA-8 which contribute a lot of profit to the customers - safety, quick and low cost cargo handling etc.

Our technology contribute to the world both safety and cost reduction.



Fully Automatic Twistlock

TAIYO's latest model Fully Automatic Twistlock Model FA-8 is no need to "Lock"/"Unlock" work which contribute to the safety and laborsaving during container cargo handling.
* Comply with OSHA rules



Semi-Automatic Twistlock NA-3J (Dual Function)

Semi-Automatic Twistlock Model : NA-3J is the best seller in the world which have the function "Automatically Lock" and "Manually Unlock".

* Comply with OSHA rules



Twist Stacker

Twist Stacker Model : M-1ST is the "hanging type" which is used in the cargo hold.

* Comply with OSHA rules

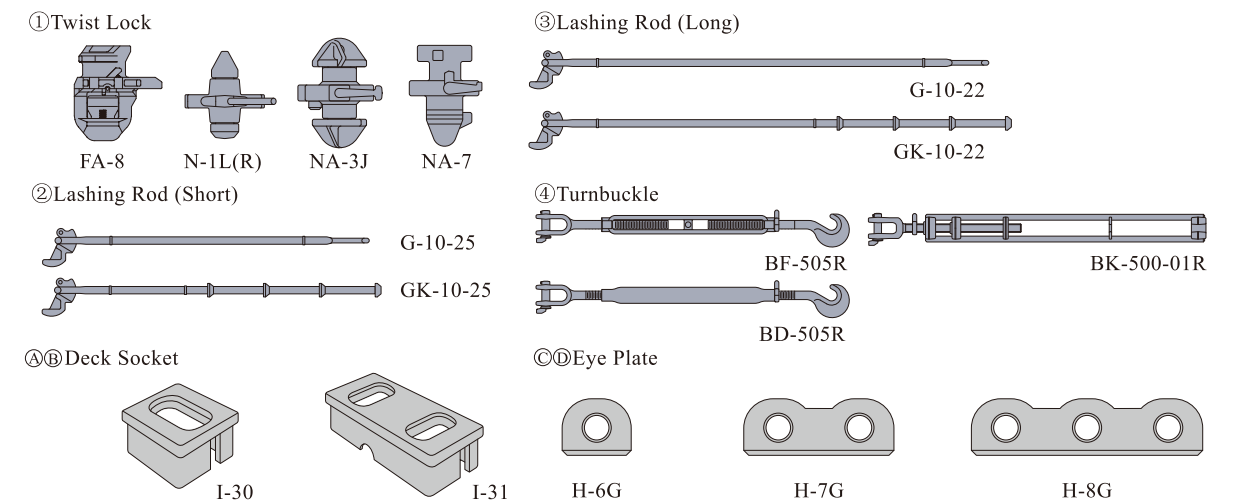
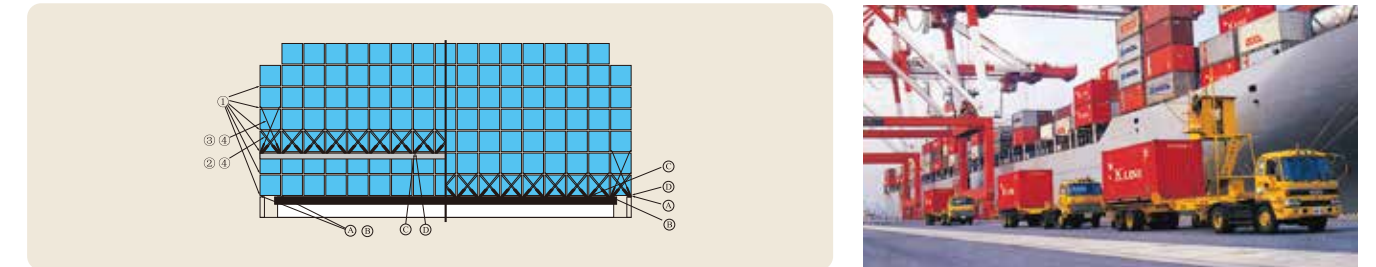
* OSHA rule : OSHA is a short word of "Occupational Safety & Health Administration" which regulate the labor's safety and health. TAIYO's products fully comply with OSHA rules.

Container Lashing System (Loose & Fixed Gears)

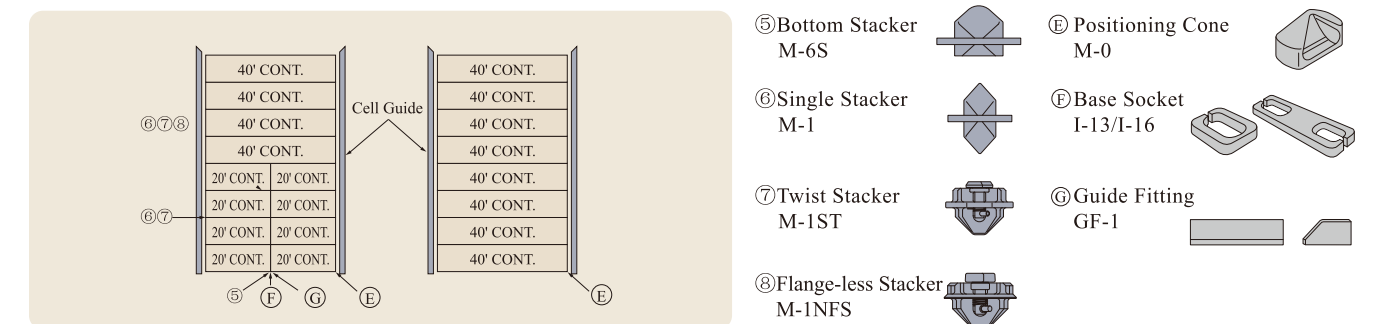
Container Vessel



Ex : Lashing Pattern On Deck



Ex : Lashing Pattern In Hold



ISO Ocean Freight Container Box Standard (Outlook dimension)



TABLE OF EXTERNAL DIMENSIONS OF ISO FREIGHT CONTAINER (ISO 668:1995,ISO 668:1995/Amd.2.2005)

TYPE	HEIGHT (H)		WIDTH (W)		LENGTH (L)		S	P	D1 - D2 MAX.
	DIMENSIONS	TOLERANCE	DIMENSIONS	TOLERANCE	DIMENSIONS	TOLERANCE			
IAAA	2896 (9'6")				12192	0	11985		19
IAA	2591 (8'6")				(40')	-10			
IA	2438 (8')	0	2438 (8')	0	6058	0	5853	2259	13
ICC	2591 (8'6")	-5		-5	(20')	-6			
IC	2438 (8')				13716	0	13509		19
IEEE	2896 (9'6")				(45')	-10			
IEE	2591 (8'6")								

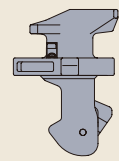
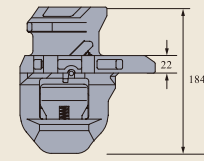
Twistlock **TAIYO**

Fully Automatic Twistlock •Unit=mm

■FA-8



NTW:6.5kg

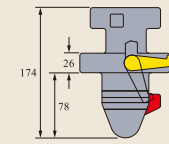


Semi Automatic Twistlock •Unit=mm

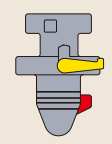
■NA-7(Single Function)



NTW:6.9kg



Lock Position



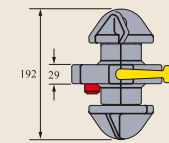
Open Position



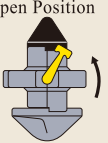
■NA-3J(Dual Function)



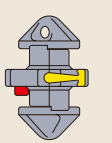
NTW:7.2kg



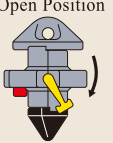
Upper Cone Open Position



Lock Position



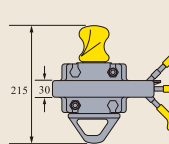
Lower Cone Open Position



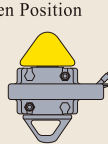
■EM-1(Dual Function)



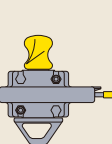
NTW:7.2kg



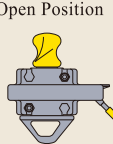
Upper Cone Open Position



Lock Position



Lower Cone Open Position

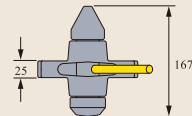


Manual Twistlock •Please confirm the locking position "left" or "right"

■N-1L(Left Lock Type, 2 notch)



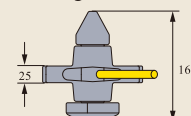
NTW:5.6kg



■N-2L(Left Lock Type, 3 notch)



NTW:6.5kg

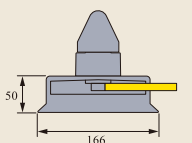


Sliding Twistlock •Please confirm the locking position "left" or "right"

■N-3TL(Left Lock Type, for I-22/I-23)



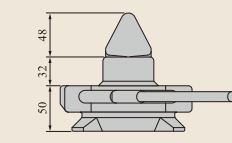
NTW:9.0kg



■NA-9L(for I-102/I-103)



NTW:6.0kg



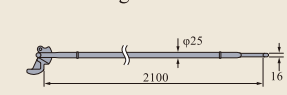
Lashing Rod & Turnbuckle **TAIYO**

Lashing Rod •Please confirm "length" and "knob pitch" when you order the rods.

■G-10-25 Short Rod



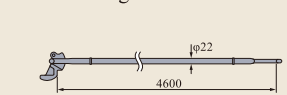
Unit=mm
B.L:50MT L=2100mm
NWT:10.4kg



■G-10-22 Long Rod



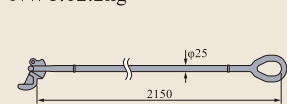
Unit=mm
B.L:36MT L=4600mm
NWT:16.3kg



■G-10-25A Equal-Lash Rod



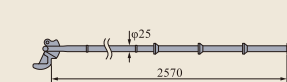
Unit=mm
B.L:50MT L=2150mm
NWT:12.2kg



■GK-10-25 Short Rod (Knob Type)



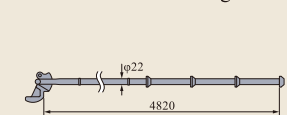
Unit=mm
B.L:50MT NWT:13.2kg



■GK-10-22 Long Rod (Knob Type)



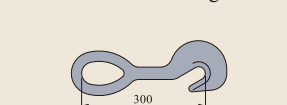
Unit=mm
B.L:36MT NWT:18.3kg



■G-8-50 Extension Rod



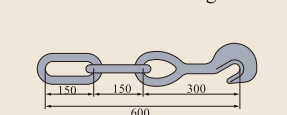
Unit=mm
B.L:50MT NWT:3.0kg



■G-8-2R-50 Extension Rod



Unit=mm
B.L:50MT NWT:6.4kg



Turnbuckle •Confirm required stroke

■BF-505R Turnbuckle (Frame Type)



BF-505 Unit=mm
B.L: 50MT
Stroke min880-max1320
NWT:13.2kg



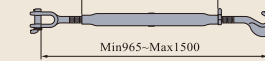
BF-505R Unit=mm
B.L:50MT
Stroke min965-max1500
NWT:14.9kg



■BD-505R Turnbuckle (Pipe Type)



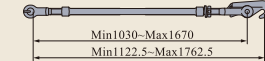
BD-505R Unit=mm
B.L:50MT
Stroke min965-max1500
NWT:14.0kg



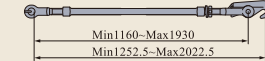
■BF-505E Equal-Lash Turnbuckle



BF-505E Unit=mm
B.L:65MT
Stroke min1030-max1670
NWT:20.0kg



BF-505ELL Unit=mm
B.L:65MT
Stroke min1160-max1930
NWT:22.6kg



■BK-500-01R Turnbuckle (Knob Type)



BK-500-01R Unit=mm
B.L:50MT
Stroke min 1146-max1481
NWT:14.9kg

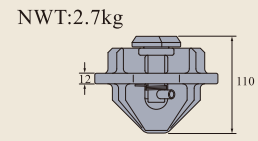




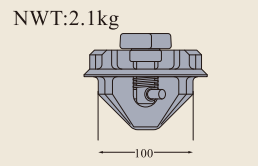
Stacker, Bridge Fitting and Others

Twist Stacker Unit=mm

■M-1ST
Twist Stacker

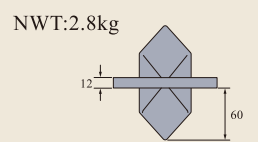


■M-1NFS
Flange less Stacker

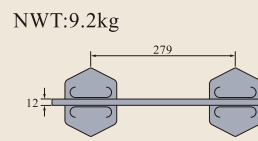


Vertical Stacker Unit=mm

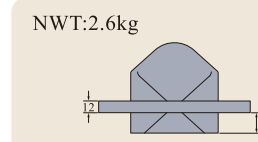
■M-1
Single Stacker



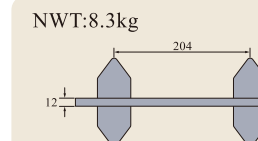
■M-2
Double Stacker



■M-6S(for I-31/I-16)
Bottom Stacker

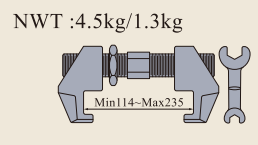
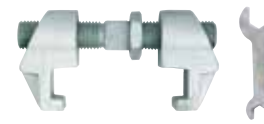


■M-3
Double Stacker

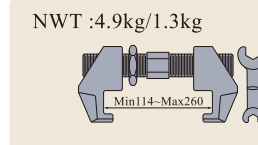
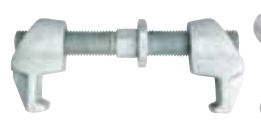


Bridge Fitting Unit=mm

■L-3/LH-3
Bridge Fitting

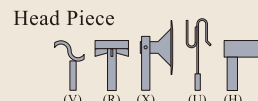


■L-3L/LH-3
Bridge Fitting

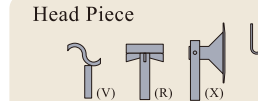


Release Bar (for twistlock operation) Unit=mm

■Aluminum



■Glass Fiber

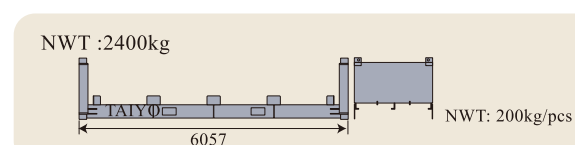


- Aluminum release bar is order made and we can provide required length.
- Over 5m long will be "joint type"(Ex : 10m=5m+5m)
- Please instruct head pieces when you order.
- Reference : Applicable twistlocks are : (V)for NA-7 (R) for NA-3J (U) for EM-1 and (H) for N-1/N-2

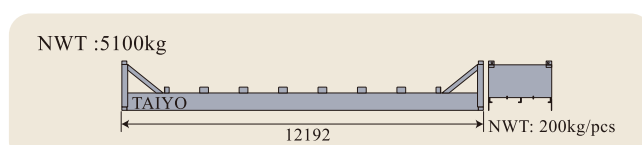
- Except model RL-V-20(1.2m), RL-V-50(1.5m) and RL-V-29(Joint 2.9m) are order made.
- Total length shall be adjusted by using joint 2.9m on 2m or 5m.(i.e.2m or 5m +2.9m pitch)
- Please instruct head pieces when you order.
- Except (V) type head pieces will be order made.
- Reference : Applicable twistlocks are : (V) for NA-7 (R) for NA-3J (U) for EM-1 and (H) for N-1/N-2

Flat Rack Container&Stowage Bin

■FR-20 20ft flat rack container & stowage bins(8pcs)



■FR-40 40ft flat rack container & stowage bins(14pcs)

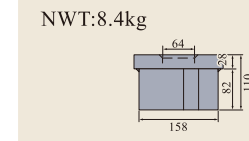
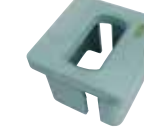


Fixed Gear

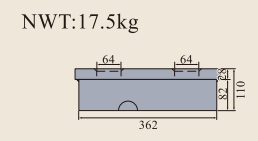


Deck Socket, Sliding Base and Eye Plate Unit=mm

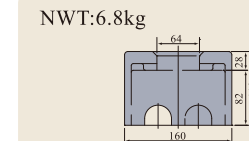
■I-30
Deck Socket
(ISO Single)



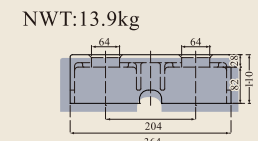
■I-31
Deck Socket(ISO Double)



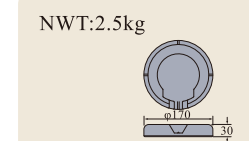
■I-50C
Cast Steel Deck Socket
(ISO Single)



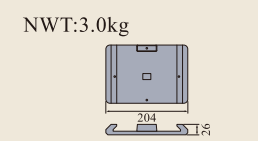
■I-51C
Cast Steel Deck Socket
(ISO Double)



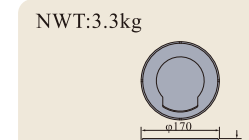
■I-102(Raised Type)
Disk Socket



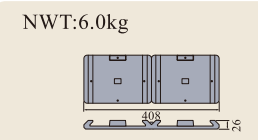
■I-22(for N-3TL)
Sliding Base(Single)



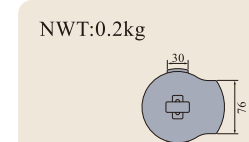
■I-103(Sunken Type)
Disk Socket



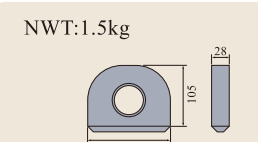
■I-23(for N-3TL)
Sliding Base(Double)



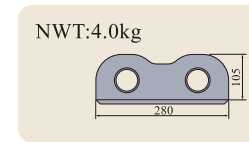
■I-100A(for I-102/I-103)
Disk Socket Cover



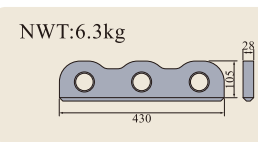
■H-6G
Eye Plate(Single)



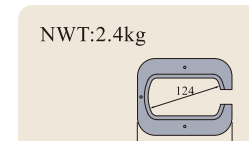
■H-7G
Eye Plate (double)



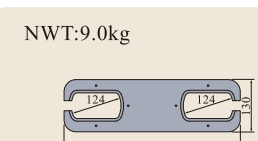
■H-8G
Eye Plate (TriPLICATE)



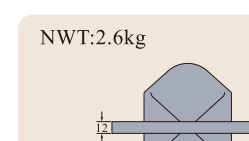
■I-13
Base Socket(Single)



■I-16
Base Socket(Double)



■M-6S(I-13/I-16)
Bottom Stacker



■M-0
Positioning Cone

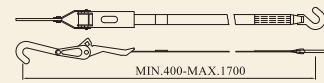


Vehicle Lashing Devices



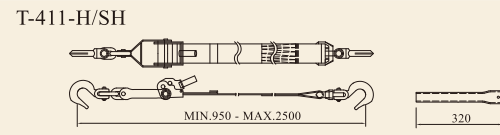
Belt Lashing (Lockner)

■K-205

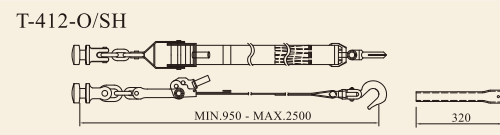


Finish	Dacrotized
NWT	0.72kg
S.W.L	0.5MT (4.9 kN) (Tensile Strength)
B.L	2.0MT (19.6 kN)

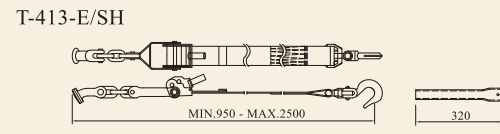
■T-411/412/413



Finish	Dacrotized
NWT	5.5kg
S.W.L	2.5MT (24.6 kN) (Tensile Strength)
B.L	10.0MT (98 kN)

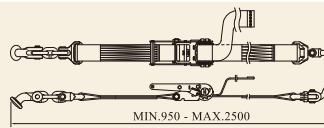


Finish	Dacrotized
NWT	5.8kg
S.W.L	2.5MT (24.6 kN) (Tensile Strength)
B.L	10.0MT (98 kN)

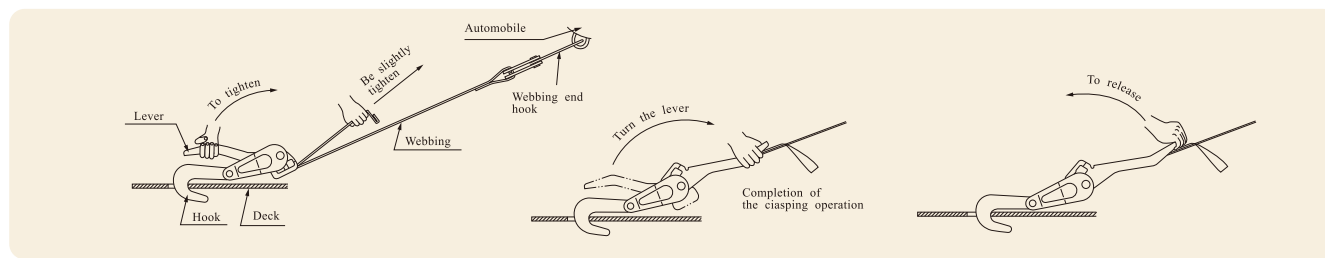


Finish	Dacrotized
NWT	5.8kg
S.W.L	2.5MT (24.6 kN) (Tensile Strength)
B.L	10.0MT (98 kN)

■K-110-E/SH

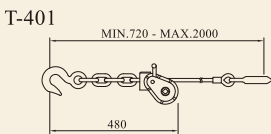


Finish for Buckle	Electroplating
Finish for main portion	Dacrotized
NWT	8.0kg
S.W.L	2.5MT (24.6 kN) (Tensile Strength)
B.L	10.0MT (98 kN)

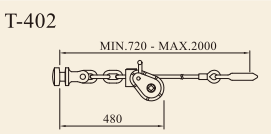


Wire Rope type Lashing (Car Stopper)

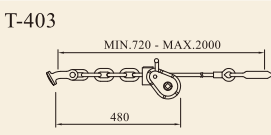
■T401/402/403



Finish	Painted
NWT	10.3kg
S.W.L	2.25MT (22.1 kN) (Tensile Strength)
B.L	9.0MT (88.3 kN)

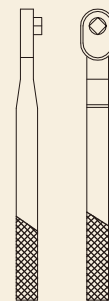


Finish	Painted
NWT	10.3kg
S.W.L	2.25MT (22.1 kN) (Tensile Strength)
B.L	9.0MT (88.3 kN)



Finish	Painted
NWT	10.3kg
S.W.L	2.25MT (22.1 kN) (Tensile Strength)
B.L	9.0MT (88.3 kN)

Ratchet Handle 471-A
NWT:2kg

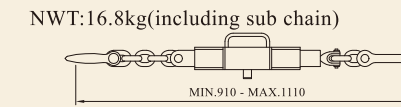


●End device shall be decided by fixed gear on vessel.

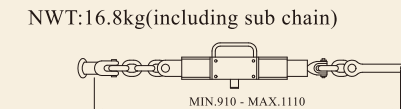
Chain Lashing (Speed Turnbuckle)



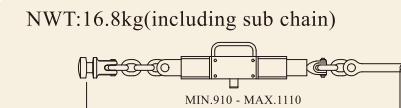
■T-501



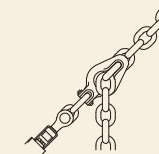
■T-502



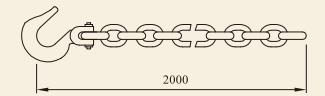
■T-504



KEY PLAN
T-501/502/504(T-503)

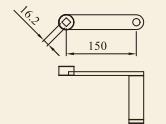


■Sub ChainT-503



■Crank Handle571-B

NWT:0.7kg



Finish	Painted
NWT:	16.8kg (including sub chain)
S.W.L	4.0MT (39.3 kN) (Tensile Strength)
B.L	6.0MT (156.9 kN)

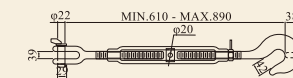
●End device shall be decided by fixed gear on vessel.

Chain Lashing

■BF-202



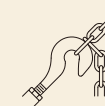
■BF-205



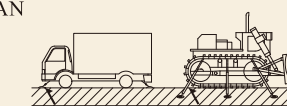
■BF-200V



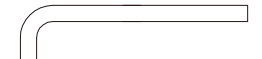
KEY PLAN



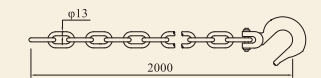
KEY PLAN



■Handle for Turnbuckle TBH-1



■Lashing ChainF-206



Finish	Galvanized Plating
NWT:	7.0kg
B.L	16.0MT(Tensile Strength)

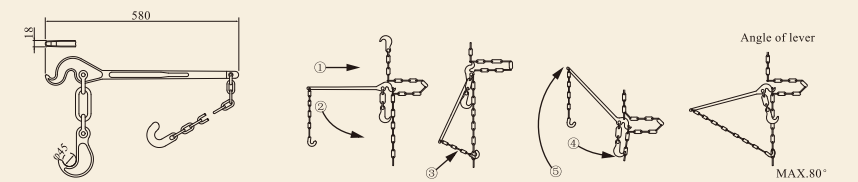
Chain Tensionner

■C-2



NWT:4.7kg

Tensionner KEY PLAN



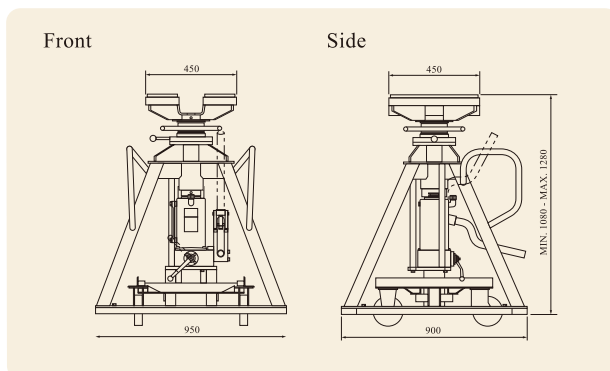
Vehicle Lashing Devices



Sub Landing Gear



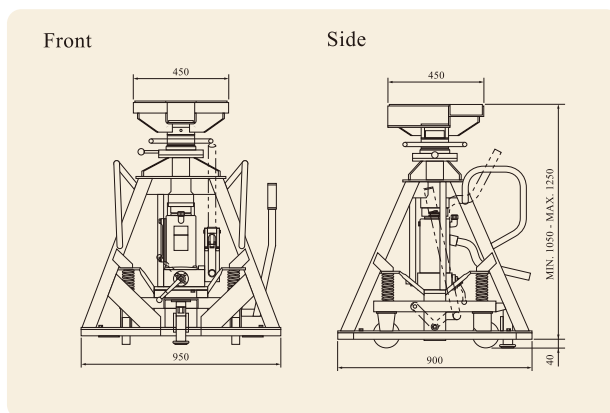
■PK-3B



NWT:	195kg
Lifting Load	30.0MT(294kN)
Breaking Load	60.0MT(588kN)



■PNS-3A(PNS-3B)



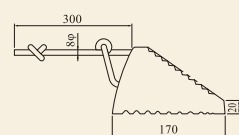
NWT:	220kg
Lifting Load	30.0MT(294kN)
Breaking Load	60.0MT(588kN)

Vehicle Wheel Chocks



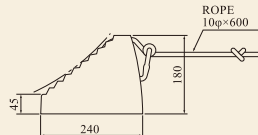
■P-6-S
(rubber made for small vehicle)

NWT:1.6kg



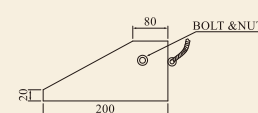
■P-6-L
(rubber made for big vehicle)

NWT:5.0kg



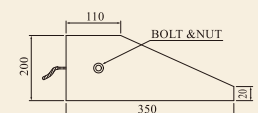
■P-5-S
(wooden made for small vehicle)

NWT:4.0kg



■P-5-L
(wooden made for big vehicle)

NWT:7.0kg



Fixed Gear



Clover Leaf Plate

■J-5-250(Raised Type)



NWT:5.3kg



■J-4-300(Flush Type)

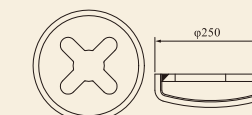


NWT:8.0kg



■J-4-250(Flush Type)

NWT:10.3kg

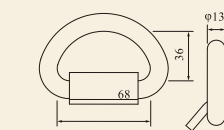


D-Ring

■H-1-13



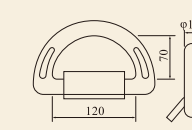
B.L	8.0MT(Vertical Tensile Strength)
NWT:	0.4kg



■H-1-16



B.L	20.0MT(Vertical Tensile Strength)
NWT:	1.3kg



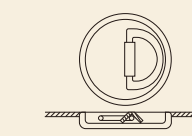
■H-1-22



B.L	50.0MT(Vertical Tensile Strength)
NWT:	4.3kg

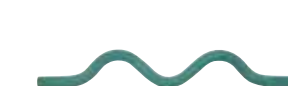


■H-2-16(Sunken Type)



Clinkle Bar (Order made)

■HC-2-13



B.L	6.0MT
NWT:	0.5kg



■HC-2-19



B.L	18.0MT
NWT:	1.2kg

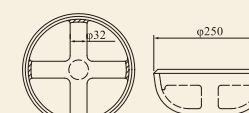


Lashing Socket

■JX-250



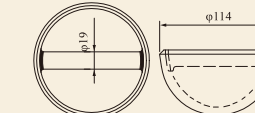
B.L	20.0MT(196kN)
NWT:	2.2kg



■JX-114R

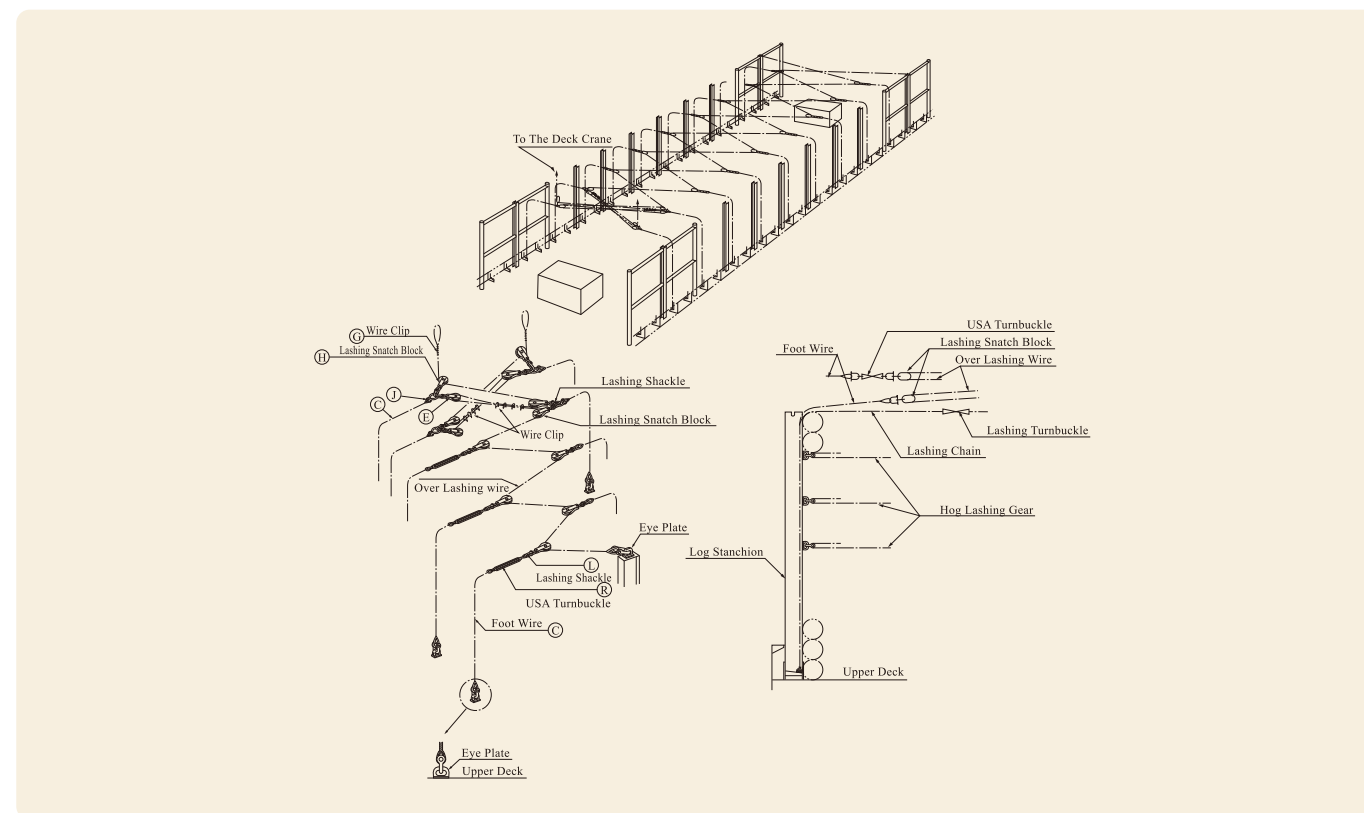


B.L	5.0MT(49kN)
NWT:	2.2kg



Log Lashing System

Ordinary lashing wire arrangement (reference only)

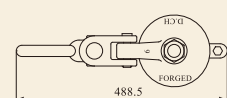


Lashing Snatch Block

■TS-150

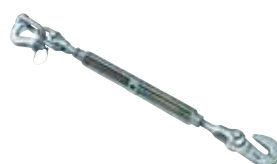


NTW:14.7kg

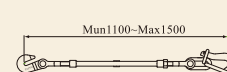


Lashing Turnbuckle (for chain use)

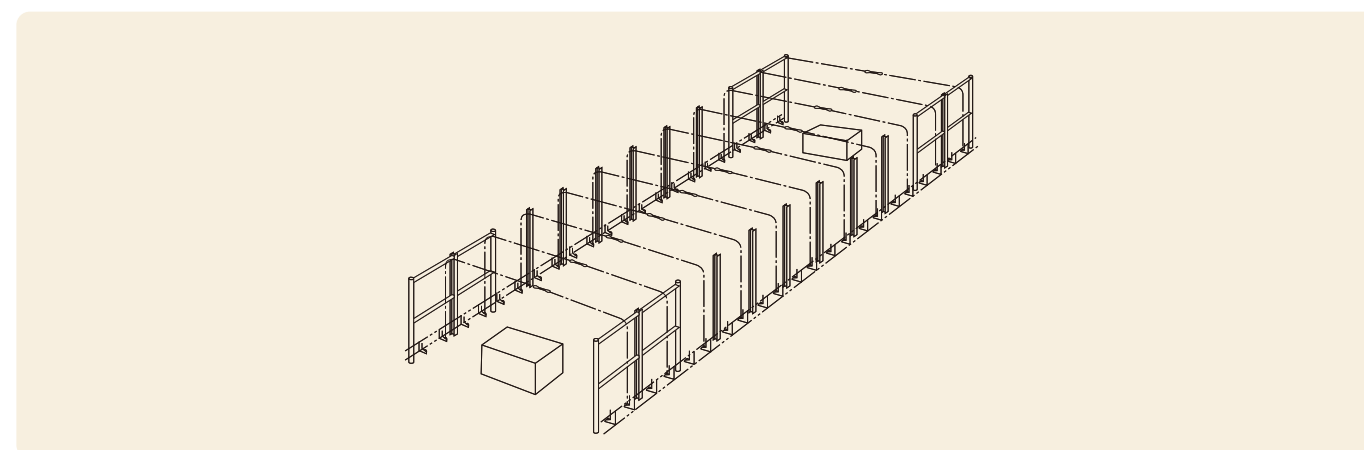
■BF-160H



NTW:12.5kg



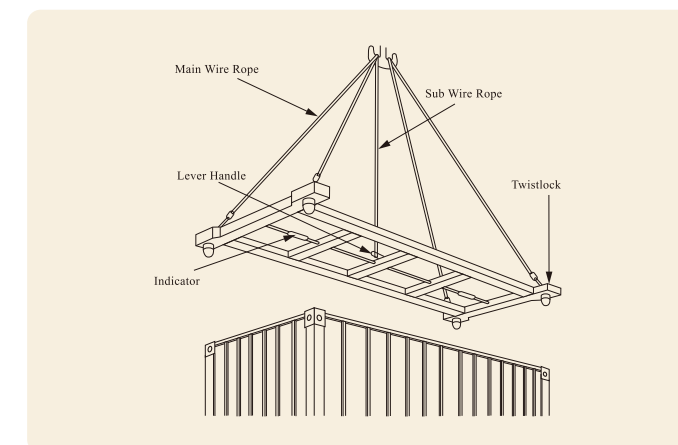
Ordinary lashing chain arrangement (reference only)



Lifting Device

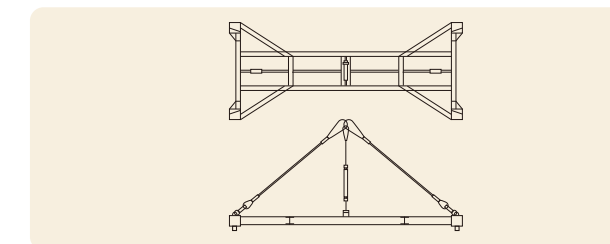


Container Lifting Spreader

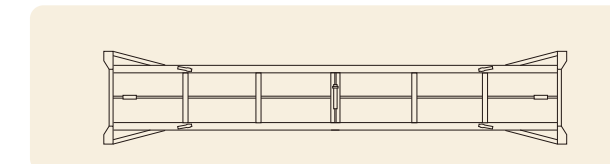


●Both Semi Automatic operation type and Manual operation type are available

■20 feet

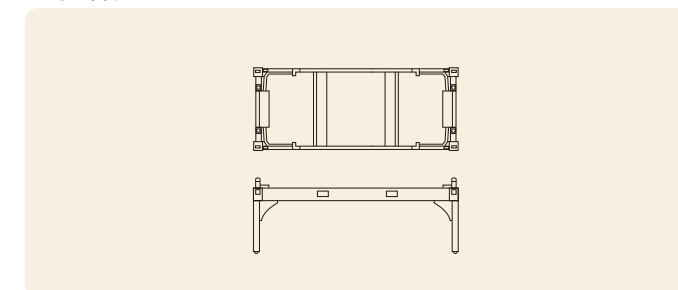


■40 feet

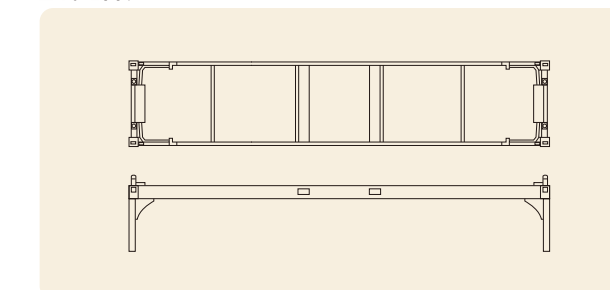


Over Height Attachment

■20 feet



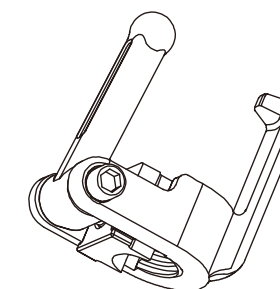
■40 feet



LOCK TIGHT

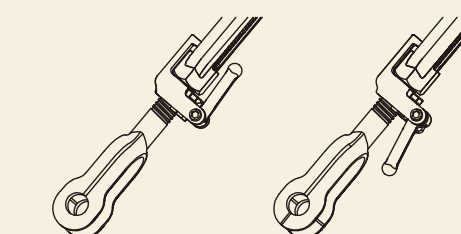


Safety locking piece to stop turnbuckle screw reversion turn.



LOCK

OPEN

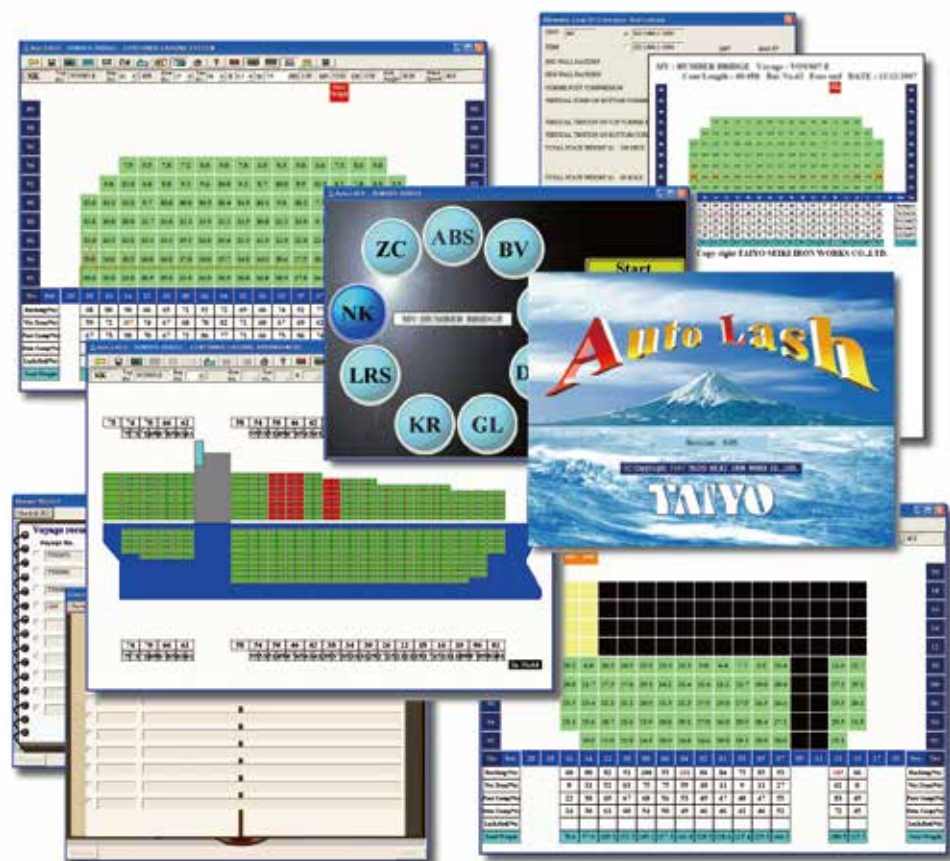


●Weight: Abt. 1.0kg. Operation is only PUSH or PULL the lever.
●This locking piece is tightly to prevent turnbuckle shaft loose from sailing vibration.

Container Stack calculating software AutoLASH



AutoLASH is the software calculating container lashing force on container box and lashing device for effective and safety container stack calculation which use the data from the loading computer on vessel.



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ashing

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