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MSA Sure-Strong™ Bridge Rescue Frame P/N# CE 108-001

Application, Operation, Maintenance & Inspection Instructions Manual

***Please read this manual.
This information is vital to your safety.***

Application

WARNING

THESE INSTRUCTIONS MUST BE PROVIDED TO THE USER. MANAGEMENT AND USER MUST READ AND UNDERSTAND THESE INSTRUCTIONS; FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

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The MSA Bridge Rescue Frame is designed as a portable emergency anchorage for retrieval of railway bridge workers from below the bridge deck. In most cases, the worker cannot be lowered, therefore the anchor point must be above the level of the bridge deck and positioned in such a way that retrieval is possible.



Function

The primary function of the Bridge Rescue Frame is to retrieve workers stranded or injured on a fall arrest system on the field side of the bridge deck. With a minor modification it becomes a tripod that can be used for retrieval through the ties between the rails.

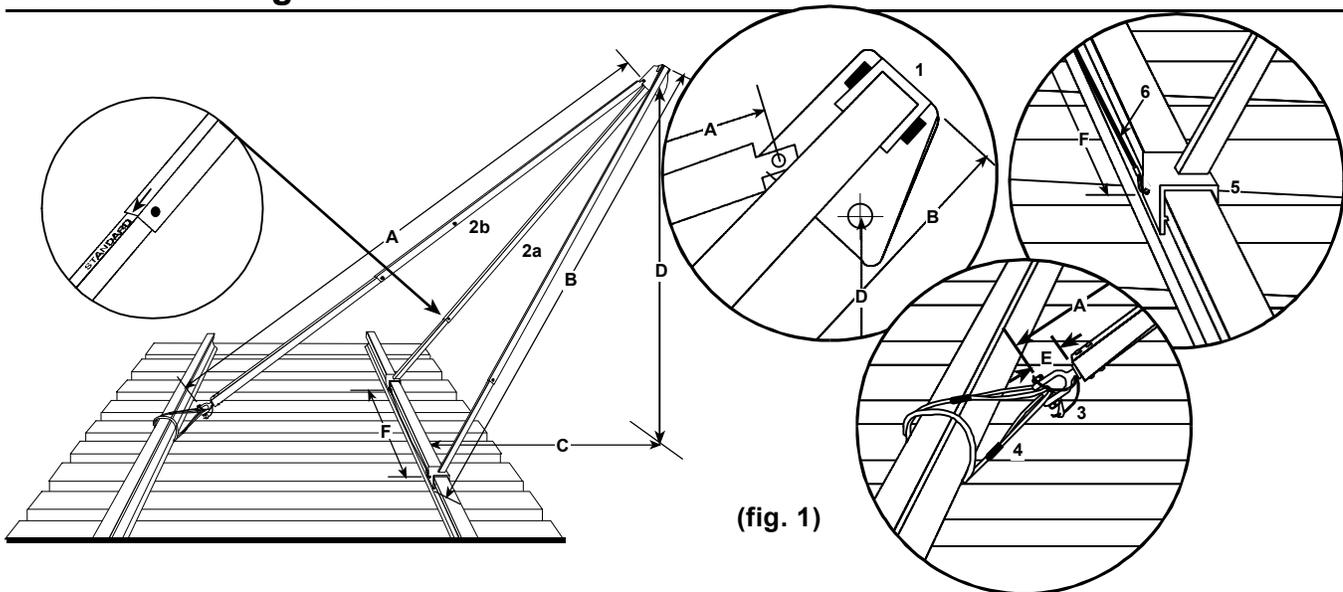
In the standard configuration (fig. 1) the frame leans forward, which positions the apex (anchor eye) over the field side of the ties. The two leading legs are secured to the rail by foot brackets which are connected with 1/4 in. steel cable to prevent spreading. This cantilever design distributes a portion of the load directly on one

rail while the remainder of the load is anchored to the opposite rail with a 3/8 in. steel cable at the end of the rear leg.

For use as a tripod (fig. 2), the lower forward legs and foot brackets are reversed so legs lean inward to position the apex over the middle of the bridge deck. The rear leg is shortened and attached to a rail connector on the other rail.

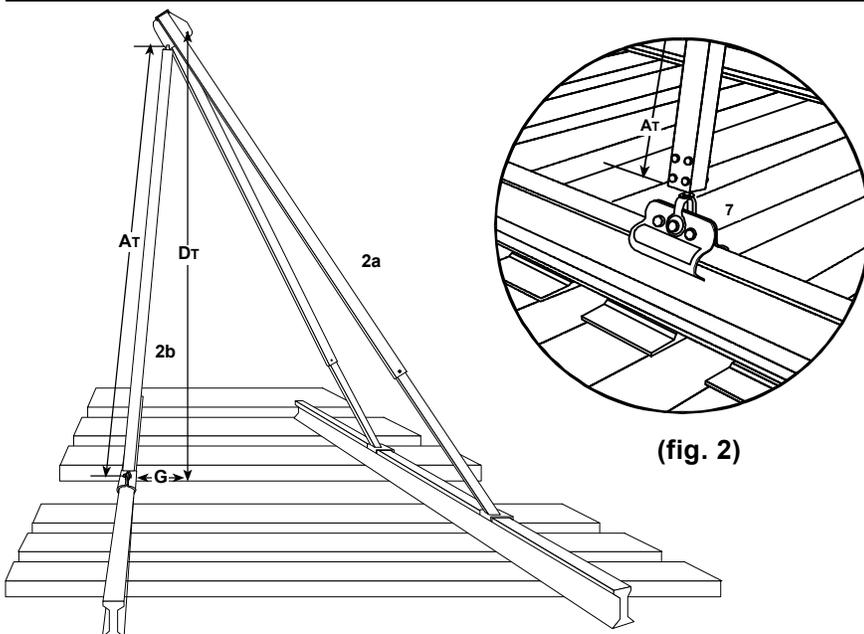
A raising system can be directly attached to the anchor eye or with optional bracket, a winch can be anchored

Standard Configuration



(fig. 1)

Tripod Modification



(fig. 2)

	Inches	cm
*A	132	335
*A _T	86	218
**B	119	302
C	60	152
C _T	12	30
***D	88	224
***D _T	95	241
**E min	2.7	6.9
**E max	9.5	24
**F	96	244
G	12.5	31

* Measurements taken with rear leg attachment at minimum length
 ** Measurements B, E and F are constant
 *** D and D_T are measured to top of tie.

Specifications

Part Number CE 108-001

1. **Head Assembly**
1/4 in bent plate aluminum
1/2 in anchor plate, 11/16 in carabiner hole
galvanized steel hardware
- 2a. **Forward Legs**
- 2b. **Rear Leg**
hollow square 2 in (5.0cm) outer leg
1 11/16 in (4.0cm) inner leg
extruded aluminum alloy
1/2 in (13mm) leg securing pin
3. **Rear Leg Rail Attachment**
solid aluminum block insert
3/4 in galvanized steel bolt with jaw end
5/8 in (16mm) securing pin and safety cotter
4. **Steel Anchor Cable Part # CE 108-014**
5 ft x 3/8 in galvanized steel
Flemish eye splice terminations
5. **Foot Brackets**
1/4 in bent plate aluminum
6. **Leg Security Cable**
1/4 in galvanized steel, vinyl coated
with Flemish spliced terminations
7. **Cordura Nylon Storage Bag Part # CE 108-001-BG**
with dual carrying handles. (not shown)
8. **Optional (Tripod Modification)**
Rail Connector Part # CE 108-015
G40.21-92 grade 44 W plate steel
fits 85 to 136 lb rail
total weight 5.5 lbs (2.5kg)
 - safe working load 1 person 310 lbs (140 kg)
2 persons 620 lbs (281 kg)*
 - collapsed storage size 10 ft (3.05m)
 - total system weight 64lbs (29kg)
(not including tripod modification kit)
 - proof loaded to 3600 lbs. (16kN)*
 - maximum observed support strength during qualification testing, 4825 lbs (21.5kN).
 - meets and exceeds ANSI proof load requirements (3600 lbs [16kN]) for anchorage connectors in the presence of certification by an engineer. (Z359.1-1992).*** when rescuer uses an approved independently anchored fall arrest system.**



WARNING

THE USER SHOULD READ THIS INSTRUCTION INFORMATION THOROUGHLY. SAFE USE OF THE RESCUE FRAME IMPLIES THAT THE APPROPRIATE FALL PROTECTION AND RESCUE TECHNIQUES ARE EMPLOYED. FALL PROTECTION SHOULD BE USED AT ALL TIMES DURING ASSEMBLY, USE AND DISASSEMBLY OF THE RESCUE FRAME.

RESCUE TECHNIQUES MUST BE ACQUIRED AS A RESULT OF A SUITABLE PERIOD OF TRAINING AND EXPERIENCE. DURING RESCUE PRACTICE SESSIONS ANCHOR THE LOAD TO A SECONDARY INDEPENDENT ANCHOR SYSTEM CAPABLE OF ARRESTING THE LOAD IN THE EVENT OF TOTAL FAILURE OF THE PRIMARY SYSTEM.

RESCUE PRACTICES SHOULD BE SUPERVISED BY A PERSON WITH SUFFICIENT TRAINING AND EXPERIENCE TO PROVIDE ASSISTANCE IN CASE OF EMERGENCY OR IN THE EVENT THAT A DANGEROUS SITUATION DEVELOPS.

Operating Instructions



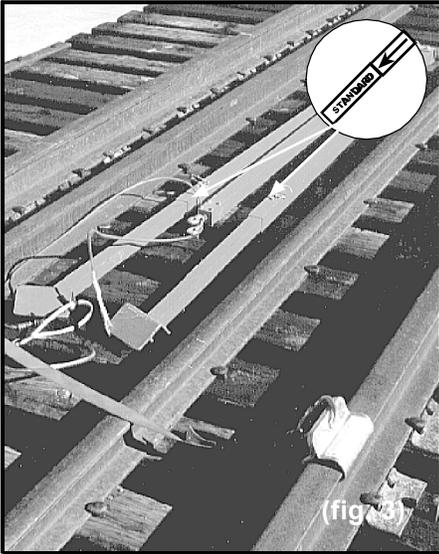
WARNING: IT IS THE RESPONSIBILITY OF THE USERS COMPANY TO HAVE A WRITTEN RESCUE PLAN WHICH MUST BE CONSIDERED BEFORE THIS EQUIPMENT IS USED. THESE PROCEDURES MUST BE PRACTICED IN ANTICIPATION OF AN EMERGENCY. ALTHOUGH IT IS POSSIBLE TO ERECT THE FRAME ALONE, MSA WOULD RECOMMEND THAT AT LEAST 2 WORKERS ARE AVAILABLE FOR OPERATION OF THE BRIDGE RESCUE FRAME IN THE EVENT OF AN INCIDENT.

THE BRIDGE RESCUE FRAME AND APPROVED HOISTING EQUIPMENT MUST BE AT THE WORK SITE AND AVAILABLE FOR RESCUE WHEN BRIDGE WORKERS ARE BELOW THE BRIDGE DECK OR USING FALL PROTECTION SYSTEMS.

1. Carry Rescue Frame and hoisting equipment to incident site.
2. Lay Rescue Frame between rails just before reaching rescue site. Use a fall protection system at all times during erection, in use and disassembling. Secure all equipment to prevent unintentional release through ties. Remember, the casualty is below your position.
3. Assess exact position of casualty; decide if frame or tripod configuration is more suitable. Open carrying case.

Operating Instructions

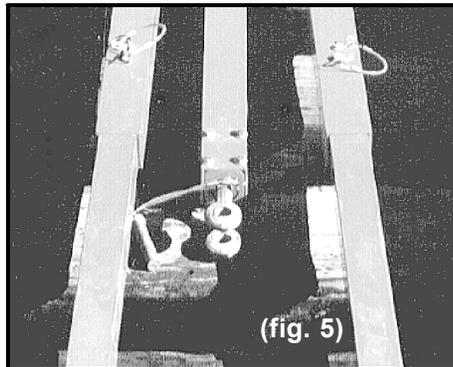
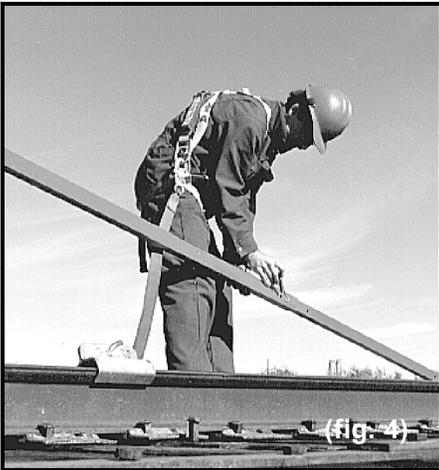
NOTE: BRIDGE RESCUE FRAME SHOULD BE STORED STANDARD CONFIGURATION WITH FORWARD LEGS PINNED AND REAR LEG IN FULLY COLLAPSED POSITION.



Standard Set Up

4. Unzip bag, turn frame so head assembly eye is down (In standard configuration arrows on legs will point to "STANDARD" marking; (fig 3). Pull rear leg security pin and adjust rear leg to fully extended position (winch attachment pin hole will be exposed), replace pin (fig 4). Ensure that rear leg attachment pin is removed, jaw connection is tightened, and hole alignment is perpendicular to rail (fig 5).
5. Line up casualty's position between ties and mark rail furthest away from casualty for cable sling position. Lay cable sling on ties close to marked rail. Connect raising system or winch redirection pulley and cable at carabiner hole in head assembly before installation on rails.

NOTE: USE ONLY HOISTING SYSTEMS APPROVED BY MSA. FOLLOW MANUFACTURER'S INSTRUCTIONS. IF USING WINCH, UNWIND 10 FT OF CABLE AND LAY WINCH ON BRIDGE DECK BEFORE INSTALLING REDIRECTION PULLEY.



Operating Instructions

WARNING

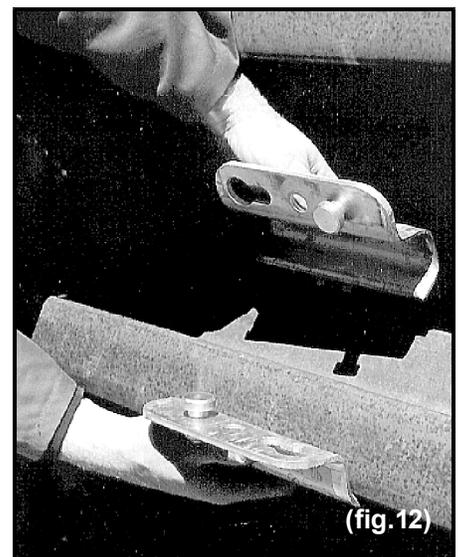
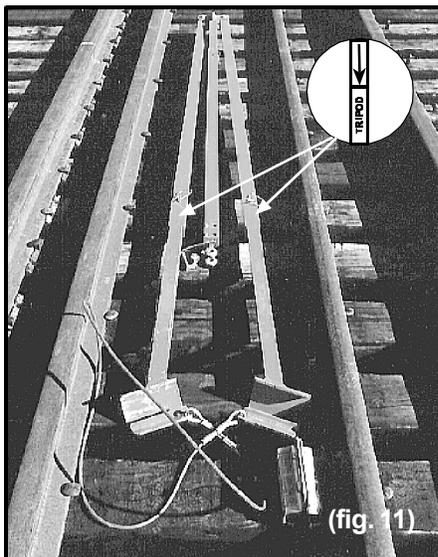
IT REQUIRES SOME EFFORT TO HOLD REAR LEG IN POSITION AS BRIDGE FRAME IS TIPPED FORWARD. LOWER SLOWLY ENSURING THAT FOOT BRACKETS STAY ON THE RAIL. ASSISTANT(S) CAN HOLD FOOT BRACKETS IN POSITION IF NECESSARY.

6. Instruct assistant to wrap anchor cable around rail twice at marked location. Place both anchor cable eyes in rear leg attachment. Insert pin in rear leg attachment (Fig. 6). Secure with cotter pin.
7. Push end of rear leg over rail (Fig. 7). Lift forward legs vertically above rail on field side of bridge, (Fig. 8) spread legs and place on rail. Check rear leg is centered between forward legs and forward legs are spread as far as leg security cable allows. Check leg securing pins (3) for security.
8. Check cable sling swage is not caught on rail and ensure cable is seated tightly on rail (Fig. 9).
9. If using a winch, connect winch bracket to rear leg at middle hole.



Tripod Set Up

10. Unzip bag, turn frame so head assembly eye is down. Pull leg security pins on forward legs and remove inner legs (Fig. 10). Reverse legs so the word "TRIPOD" is facing up and leg security cable is on inside of legs. Ensure rear leg is in fully collapsed position and leg securing pin is in place as in (Fig. 11).
11. Remove tripod modification kit (Rail Connector).
12. Disassemble Rail Connector profile plates. Place one profile plate on the crown of the rail in line with the casualty's position. Align the receiving bolts and holes of other profile plate and connect plates (Fig. 12).



Operating Instructions

13. When the profile plates are flush with each other (Fig. 13), slide plates in opposite directions parallel to the rail. The plates are now locked on the crown of the rail. (Fig. 14)



14. Turn frame perpendicular to the rail with head assembly on the Rail Connector side of bridge deck and turn so anchor eye is up.

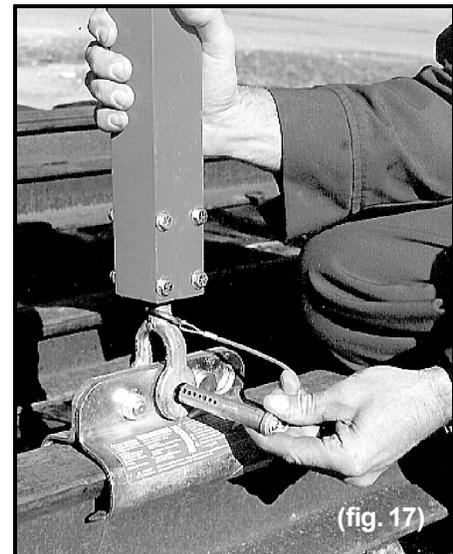
15. Instruct assistant(s) to raise and spread forward legs vertically while holding rear leg (Fig. 15). Ensure leg security cable is free of obstructions. Place foot brackets on the rail with head assembly directly inline with the Rail Connector.



16. Lean forward legs toward opposite rail while lifting rear leg and place rear leg attachment jaw on top of Rail Connector (Fig. 16).

17. Tip Rail Connector towards centre of bridge and connect to rear leg attachment jaw with security pin (Fig. 17). Secure with cotter pin. Ensure that rail slider is directly below tripod head and does not move during operation.

18. Connect hoisting system to carabiner hole. If using winch, unwind 10 ft. (3 m) of cable and connect cable and pulley to carabiner hole. Attach winch to leg with bracket and secure with leg securing pin. Recheck all leg securing pins.



Inspection

NOTE: A PERSON WITHIN THE USER'S ORGANIZATION MUST BE APPOINTED TO BE RESPONSIBLE FOR INSPECTION, MAINTENANCE AND STORAGE OF EQUIPMENT. THE BRIDGE RESCUE FRAME MUST BE SEALED TO DISCOURAGE TAMPERING AND ONLY REMOVED FOR RESCUE PRACTICES, YEARLY INSPECTIONS AND IN THE EVENT OF AN EMERGENCY.

1. The MSA Sure-Strong Rescue Frame shall be inspected before practice sessions, after use and additionally by a competent person other than the user at intervals of no more than one year. Inspections must be recorded in the Inspection Checklist.
2. When inspection reveals defects, damage, or inadequate maintenance of any component in the system, the component affected shall be removed from service to undergo adequate corrective maintenance before return to service. Removal from service may imply that defects or damage will result in retiring and replacing some components.
3. Remove a unit from service if:
 - it has been subjected to excessive shock loading;
 - markings (labels) are illegible or absent;
 - there is evidence of defects or damage to hardware elements including cracks, sharp edges, deformation, corrosion, chemical attack, excessive heating, alteration, excessive aging or excessive wear;
 - there are kinks or other damage to anchor cable;
 - there is evidence of improper function, improper fit of components or if any component is missing.
4. MSA or persons or entities authorized in writing by the manufacturer, shall make repairs to equipment. No unauthorized repairs and/or modifications are allowed.

Maintenance and Storage

1. Maintenance and storage of Bridge Rescue Frame shall be conducted by the user's organization in accordance with MSA instructions. Unique issues, which may arise due to conditions of use, should be addressed with MSA.
2. Components which are in need of or scheduled for maintenance shall be tagged as "do not use" and removed from service.
3. Store in clean, dry area specifically set aside for emergency equipment.

Design Statements

- The MSA Sure-Strong™ Bridge Rescue Frame shall comply to and be used with consideration to all government or other applicable regulations and standards.
- The MSA Sure-Strong™ Bridge Rescue Frame is a engineered and thoroughly tested product. The system must be used as described in these instructions. All additional rescue equipment intended for use with the product must not be used without written approval by MSA. If the buyer chooses to disregard this warning he assumes sole responsibility for the integrity of the entire system.
- The MSA Sure-Strong™ Bridge Rescue Frame is designed as a rescue anchorage connector. It must not be used as a fall arrest anchorage. In an emergency the Bridge Rescue Frame can accommodate two workers or up to 600 lbs (272kg) simultaneously. Suspension of rescue personnel must be backed up by an independently anchored secondary system capable of supporting 5000 lbs (22.2kN).
- Do not use Bridge Rescue Frame and hoisting system adjacent to moving machinery, electrical hazards or in the presence of excessive heat, open flame or molten metal.
- Apply forces to the system only in the direction in indicated by specification drawings. Forces applied in other directions may cause stress which the system is not designed to withstand.
- Rail connector must not be used for fall protection.

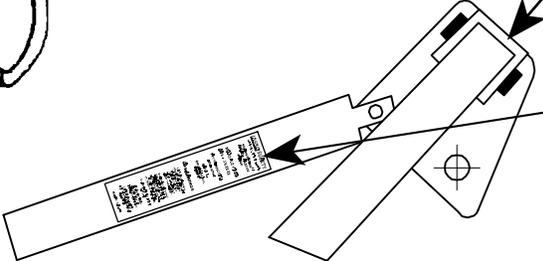
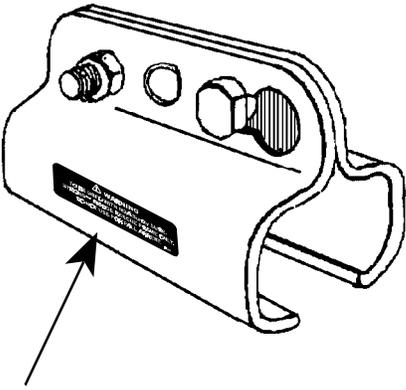
Inspection Checklist

Model No. _____ Serial # _____

Date _____

Inspected By _____

Description	<div style="display: flex; justify-content: space-around; width: 100%;"> Good Damaged, worn, altered Missing Remove from service </div>				Comments
HEAD ASSEMBLY AND HARDWARE					
FORWARD LEG ASSEMBLY					
FORWARD LEG SECURITY PINS (2)					
FOOT BRACKETS					
LEG SECURITY CABLE					
REAR LEG ASSEMBLY					
SECURITY PIN (1)					
ATTACHMENT JAW					
JAW SECURING PIN					
SAFETY PIN					
CABLE ANCHOR SLING					
RAIL CONNECTOR					



SERIAL #

⚠ WARNING

TO BE USED WITH MSA SURE-STRONG™ BRIDGE RESCUE FRAME ONLY. DO NOT USE FOR FALL ARREST.

#232

MSA *FP*
 Empowering Global Safety, USA

SURE-STRONG™ BRIDGE RESCUE FRAME

MODEL: CE 107-001
 DATE: XX-XX-XX
 SAFE WORKING LOAD:
 600 lbs (272kg)

MATERIAL:
 Extruded aluminum,
 forged steel.

⚠ WARNINGS
 Use in accordance with instruction manual included with product at time of shipment. Failure to comply could result in serious injury or death.

Suspension of personnel must be backed up by an independently anchored secondary system capable of supporting 600 lbs (272kg) with dynamic forces.

Inspect equipment prior to each use.

If inspection reveals damage, misuse or abnormal use of equipment, use of fall protection is required when exposed to a potential fall.

Made in U.S.A.