

DRILL FLOOR SAFETY MANRIDING GUIDANCE

Working together to continuously improve our safety performance



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1.0 Introduction



In 2001, Step Change in Safety published the 'Best Practice Guide to Manriding Safety'. This document was developed to provide industry with concise guidance for manriding operations in Derricks, Masts and Moonpool areas using best practice information in one consolidated document that could be easily referenced as and when required.

For clarity, manriding is defined as "the raising/lowering of a person using a certified manriding winch, with the person wearing an approved full body harness that is directly connected to a hoist with a triple action carabiner."

With technology, equipment and techniques improving and evolving it has become necessary to review this guidance and amend the contents to ensure that it remains the leading reference document for all manriding operations and that it continues to meet the needs of the oil and gas industry.

It is recognised within the oil and gas industry, that manriding may be the most suitable form of access for certain working at height activities or tasks. Properly planned, using appropriately maintained and certified equipment operated by competent people, manriding can be carried out safely through the stringent application of appropriate controls.

Note: A key lesson from previous incidents is that manriding should not be conducted close to moving/rotating equipment and between different levels where 'line of sight' is restricted.

The ultimate goal is to eliminate the need for manriding operations by utilising alternative methods and/or adopting cost effective engineered solutions. Although industry has made progress towards that goal, it is recognised that total elimination of manriding remains some way off and manriding remains a viable, safe option for working at height on installations. While this remains the case, this document retains its value by ensuring guidance and best practice information is readily available for manriding tasks.



2.0 Design, Selection and Certification of Manriding Equipment

All winches used for lifting personnel should be clearly marked "SUITABLE FOR MANRIDING" It is vital that equipment used for manriding operations is correctly designed, selected, maintained and certificated and that the components meet the required safety factors for the activity e.g. safety load factor for pad eyes, anchorages, and non-rotating wire rope.

Documentation

The following documents should be available for review:

- A Certificate of Conformance provided by the manufacturer for the manriding winch e.g. CE approved
- Documentary evidence of approval for manriding of the main components. (e.g., winches, wire rope, shackles, slings)
- Test certificates for winches, rope, harnesses, fall arrest systems, loose gear, lanyards, padeyes, including verification of temperature requirements on steel components
- PUWER assessment of the winch installation and operation

Installation & Repair

After installation and when putting into service for the first time, or when carrying out major repairs such as brake or motor replacement, the manriding assembly should be load tested and all safety controls operated as per the manufacturer's recommendations. A thorough inspection of the whole assembly should be conducted. This should be performed by a competent person trained by the OEM (Original Equipment Manufacturer), or agent.

All winches used for lifting personnel should be clearly marked "SUITABLE FOR MANRIDING"

The winch should be designed with at least the following:

- Primary brake
- A secondary fail safe brake system independent of the main drive that can be tested independently of the primary brake
- An independent shut off mechanism, located between the power source and the winch
- A control handle which should return to neutral automatically, on release
- Over-pull restriction (winch maximum load pull of 150kg)
- Speed restriction of 1m/s
- Upper limit switches
- Slack wire protective trip emergency lowering capability in the event of power failure
- Drum guard
- Wire spooling devices (preferably automatic)
- Secondary power supply to allow recovery in the event of loss of power
- Controls arranged such that the operator can maintain full view of the operation at all times
- Lockable shackle (at least double)

Safe Securing of Manriding Equipment

When manriding equipment is not in use, care should be taken to ensure that it is stowed away in a safe and secure manner, to prevent damage, or interference with other operations. There have been incidents where the manriding wire has been caught-up/ broken by other moving equipment such as the blocks. A means of keeping the manriding wire clear of moving equipment is with a hoist anchor point weak-link safety device e.g. a "snubby line": see Appendix 9.

3.0 Working at Height Risk Assessment & Planning Matrix

It is recognised within the oil and gas industry that manriding may be the most suitable form of access for certain working at height activities or tasks.

Where manriding is an option for an activity or task involving working at height, then all other practical alternative means of access must be considered, to ensure that the risk to personnel is as low as reasonably practicable (ALARP) and in accordance with the "hierarchy of control" principles e.g. elimination, substitution etc.

The 'Working at Height Planning Matrix' contained within this guidance document provides a mechanism for assessing all currently recognised forms of access to working at height, while providing a means of documenting the results, and recording the justification for the method chosen.

As part of the Control of Work process, the use of a Permit to Work is considered best practice.

A worksite assessment should be undertaken for all foreseeable manriding activities, utilising the Working at Height Planning Matrix (example shown overleaf). This will provide sites with a documented process for demonstrating ALARP.

The working at height assessment tool should be used to consider all means of access and relevant considerations for their use.

Means of access to consider:-

- Can a fixed Work Platform be used?
- Can a Ladder be used?
- Can a Rope Access Team be used?
- Can a Mobile Elevated Work Platform be used?
- Can Scaffolding be used?
- Can a fixed Telescopic Handling Basket be used?
- Can a Manriding Winch be used?

Assessment Considerations:-

1 Training and Competency Requirements

Are personnel adequately trained and competent to undertake the task, using the suggested access method and equipment?

2 Rescue Considerations

Could the individual(s) working at height foreseeably be left suspended or exposed due to weather, injury or equipment failure?

3 Location of Task

Does the location (including height and restriction of space) of the planned task negate any of the proposed methods being utilised?

4 Equipment Availability

Is certified and maintained equipment readily available and verified as fit for the proposed task?

5 Personnel Availability

Are adequate numbers of suitably trained and competent personnel available to provide/operate the means of access and carry out rescue if required?

6 Management of Task

Is adequate supervision available? Is all the required documentation and information available to the work party?



7 Resource

Combined effort, risk, time and cost is a valid consideration, particularly when certain means of access may not be immediately or readily available. However, this consideration must be balanced against any of the other valid considerations listed here.

8 Nature of Task

Consider the working conditions, the scope of the activity and complexity of the task, the resources required, including number of personnel and tools/equipment.

9 Duration of task

Is the work activity of short or long term duration? Consider the need for the rotation of personnel (i.e. time limits to be in a manriding harness)? Consider recording the time spend in the manriding harness on completion of the task.

10 Weather

Due consideration to prevailing weather conditions should be considered in compliance with company limits or manufacturer's instructions

ALL METHOD OF WORKING AT HEIGHT SHOULD BE CONSIDERED BEFORE MANRIDING											
METHOD OF ACCESS	TRAINING & COMPETENCE	RESCUE	LOCATION	EQUIPMENT	PERSONNEL	MANANGEMENT OF TASK	RESOURCE	NATURE OF TASK	DURATION OF TASK	WEATHER	JUSTIFICATION FOR USING/NOT USING
Can a fixed Work Platform be used?											
Can a Ladder be used?											
Can a Rope Access Team be used?											
Can a Mobile Elevated Work Platform be used?											
Can Scaffolding be used?											
Can a fixed Telescopic Handling Basket be used?											
Can a Manriding Winch be used?											
Rig Name:											
Risk Assessment (TRA Reference No:	Lisk Assessment (TRA) Completed by: Position:										
Fask: Signature:											

Following the assessment, a register should be created for all identified working at height activities (see Appendix 4). A manriding register should also be kept, to allow installations to log agreed and acceptable manriding activities and to allow for regular review and verification of continuing acceptability (see Appendix 5).

4.0 Training and Competence

It is the responsibility of the employer to develop and implement a competency program for their activities. Details contained in this section are for guidance only.

Definition of Competence

Consistent demonstration and application of current skills, knowledge and behaviour against a defined performance standard over a period of time (definition from Step Change – Competence Management Framework)

Training & Competence programme for Manriding Awareness Training

It is recommended that as part of a manriding program, awareness training is carried out. This should aim to provide basic knowledge of applicable legislation, manriding equipment, safety devices, communication methods, emergency rescue procedures and safe systems for tools aloft.

Awareness training can be in the form of a PowerPoint presentation and can take place in an office/classroom type environment. The aim of awareness training is to introduce the systems and procedures involved in the activity. Awareness training should only be used as part of the overall manriding training and competence program. Awareness training alone is not suitable.

It is recommended that the following areas are addressed in any manriding competency program:-

Competency Programme

A person cannot be deemed competent unless trained and assessed against criteria for the activity by a competent assessor. It is recommended that individuals receive specific training and are assessed against the following criteria as a minimum:-

- Rig specific procedure for manriding
- Pre-operation checklist (see Appendix 1)
- Harness use & operation (see Appendix 7)
- Winch line & ferrule inspection (see Appendix 8)
- Winch and utility air supply
- Winch safety features
- PPE requirements
- Hand signals (see Appendix 2)
- Radio signals
- Tools aloft requirements
- Emergency Rescue Plan

5.0 Manriding Winch Maintenance



Dedicated manriding winches were first introduced into the oil and gas industry in the 1990s, to provide a safer means of lifting/lowering personnel.

Irrespective of which model is in operation, it is important that the following criteria are adhered to:

- 1. The winches are only operated by appropriately trained and competent personnel.
- 2. The winches are only maintained by appropriately trained and competent personnel as per the manufacturer's recommendations
- 3. Independent brake tests should be carried out periodically (recommended every 3 months) by appropriately trained and competent personnel, using free weights as opposed to a line pull test.
- 4. Each winch has the correct air treatment in place commonly known as an FRL (Filter, Regulator, Lubricator)
- 5. The air supply to each winch should be set at 90PSI* (or manufacturer's recommended setting) and the regulator locked using a "tamper proof cap", as operating outwith this pressure will impact on the winch performance.
- 6. The correct size of hose/pipework should be fitted to each winch (a minimum of 1" inside diameter is recommended)
- 7. During maintenance, only genuine OEM parts should be used, or formal approval given by the OEM or company technical authority, if a substitute is used.
- 8. The correct grade of wire rope (normally 10mm non-rotating wire rope) should be used on the winches.
- 9. When not in use, the wire rope should be fixed in a safe manner to a designated anchor point to prevent catching or damage by external factors, such as snagging on the top drive. Always store the wire rope in a 'no load' condition.
- 10. The correct lubricants and lubricant replacement schedules should be used as per the maintenance manuals.
- 11. The fitting of specially designed tarpaulin covers to the winches to protect them when not in use is recommended.

*NOTE 90psi is a dynamic pressure i.e. when the winch is operating, the system pressure should remain at 90 psi.

Manriding Checks:-

150kg Manriding Checks

The checklists detailed in Appendix 3 are guidelines for maintenance inspections. The winch manufacturer's manual must be referred to for safety information, winch operating instructions and winch specifications.

There are two types of maintenance/inspection: - Frequent and Periodic

Frequent is carried out at the start of each shift and during normal operations.

Periodic is a preventive maintenance measure, to ensure safe operation and to prolong the service life cycle of the winch. This is carried out at defined periods and is more intensive than Frequent. It is recommended that this maintenance is carried out every three months. An example of a Maintenance/Inspection Checklist is contained in Appendix 3.

6.0 Emergency Plans and Equipment



Before any manriding operation can commence, a Rescue Plan must be considered, as part of the pre-task risk assessment and all identified equipment detailed within the Rescue Plan must be readily available.

It should be understood that a rescue operation can introduce its own hazards, therefore the planning and execution of this operation requires particular care, consideration and detailed preparation in the form of risk assessment before commencing.

The maximum recommended suspension time for any individual manrider, in harness, is 20 minutes. Any longer than this and the manrider may start to lose circulation in the limbs held by the harness, which can result in discomfort, or, loss of consciousness in a worst case scenario. Consideration should be given to repairing malfunctioning equipment before attempting a rescue, if the equipment can be repaired safely and if the manrider is not in any immediate danger i.e. if the air supply to the winch fails but can be reinstated within a short timescale. The manrider may then be brought to safety once the equipment is repaired.

Equipment that may be an integral part of a Rescue Plan:-

- 1. Harness Full body type fitted with a 'D' Ring suitable for rescue purposes
- 2. Alternative nitrogen or air supply to the winch
- 3. Secondary winch
- 4. Rescue basket (for use with alternative winch), certified for manriding
- 5. Cherry picker
- 6. Fully charged radios
- 7. Emergency manual lowering device on main manriding winch
- 8. Emergency descent/ascent device (personnel must be trained in its use)

The use of emergency descent/ascent devices should only be used if no other alternatives can be found. Only **trained and competent** personnel should operate such devices.

As with any manriding task, during a rescue operation it is essential that, in the event circumstances change, that a full re-assessment of conditions is conducted to ensure the continued safety of everyone involved.

Rescue and recovery plans should be exercised at regular intervals (recommended time is every 3 months) to ensure that those who would be involved are aware of their duties and maintain their skill levels.

A typical example of a Rescue Plan Check-Sheet, used to facilitate constructing a plan is shown in Appendix 6.

7.0 Case Study-Manriding Fatality



The Event: Worker Crushed

A worker was working on the control hoses for the diverter under the drill floor - suspended on a manriding winch. During the operation, the worker was raised too far and crushed against the bottom of the rig floor.

- 1. The person operating the winch on the drill floor was unable to see the worker in the riding belt. A radio was in use between the person on the winch and a banksman on the BOP deck below.
- 2. There was no safeguard against a failure in communication.
- 3. The manriding winch was capable of generating large loads.

Reflections

- 1. Do you carry out manriding operations?
- 2. Do you use the Step Change guidelines and signals? If not, are your own systems as good or better?
- 3. Manriding is a bit like flying if you or your family are in the air what expectations do you have of the pilot (winchman), air traffic control (banksman) and passengers (the man in the belt)?
- 4. Do you carry out operations that rely on radio contact how do you ensure that radio failure does not lead to death or injury?

Appendix 1 – Manriding Operations Checklist

All persons involved in the manriding operation must be involved in the completion of this check list. All manriding operations should be carried out under a Work Permit and Task Risk Assessment.

Checklist		Installation:	Time:		
No	Pre Manri	ding Actions		Yes	No
1.	Have the re	you?			
2.	Have you re	ons			
3.	Are the cur				
4.	Have you p				
5.	Have all ot	stopped?			
6.	Have "DO machinery?	interfering			
7.	If the task i				
8.	Is the "mar with PLB (P	e vest			
9.	Have the R				
10.	Has the wir	NT?			
11.	If the manr appointed?	en			
12.	If using rad	ios have the RAISE, STOP and LC	WER signals been agreed?		
13.	If using rad	ios, is there a dedicated channel	, batteries checked and radio	tested?	
14.	If derrick ca	ameras are available has a crew r	nember been assigned to mo	nitor?	
15.	Is the harne and in goo	ess, carabiner/shackle and winch d condition? Has the harness bee	line ferrule certification in date and a series of the ser	te, clean	
16.	Is the manr	ider wearing a helmet chinstrap	?		
17.	Is the winc	n line connected directly to the h	arness (no swivel or hooks)?		
18.	Is the winc	n marked "MANRIDING WINCH"	' and the certification in date?	?	
19.	Is the winc	n cable in good condition and sp	ooled correctly (min 6 turns o	n drum)?	
20.	Where pos	sible, have derrick/mast obstacles	s been tied back and checked	?	
21.	Are the ma	nual and automatic brakes opera	ating correctly?		
22.	Does the conneutral aut	ontrol lever operate correctly, is it omatically?	t clearly marked and does it re	turn to	
23.	Has the em	ergency stop facility been tested	?		
24.	If fitted, ha	s the load limiter been overload	tested?		
25.	If a fall arre separate m	stor is to be used has it been tes eans of connection to the harne	ted before use and does it ha ss?	ve a	
26.	Has the ap	proach route been checked?			

No	Pre Manriding Actions	Yes	No
27.	Has the winch operator agreed that he will not leave the winch while the person is manriding?		
28.	Are the hand tools of sufficient size for easy handling?		
29.	Are the hand tools tied off to the harness/manrider securely?		
30.	Have the manrider pockets been emptied of loose articles?		
31.	Confirm Area Supervisor is at the scene monitoring operations, if not - stop work.		
32.	Are Barriers/lookouts in place to warn unsuspecting personnel that work is going on?		
33.	PA announcement made that manriding operations are about to start (state area)?		
34.	Have all members of the work party completed manriding training packages?		

No	Post Manriding Actions	
1.	Announcement made after manriding is complete?	
2.	Has the equipment been properly demobilised?	
3.	Has the manriding register been completed?	
4.	Has tugger line been stowed away after use?	
5.	Has a post manriding review been held with the crew and any learnings captured?	

SUPERVISOR NAME (TP or OIM)	Signature	Date
DRILLER NAME	Signature	Date
MANRIDER NAME	Signature	Date
WINCH OPERATOR	Signature	Date

Appendix 2 -Manriding Hand Signals

The original 'Best Practice Guide to manriding Safety' guidance document rightly placed a significant emphasis on highlighting the need for good communications as a key to the success of all activities undertaken within our industry. Manriding was, and is, no exception to this philosophy.

To facilitate communication during manriding operations a consolidated guide to appropriate hand signals to adopt for this hazardous activity were produced within the original publication.

These hand signal guidelines have stood the test of time and remain as valid today as they were in 2001 when the original document was published.

All personnel involved in manriding operations must embrace a common set of signals that everyone is familiar with. Utilising the hand signals displayed overleaf is following industry best practice, ensuring that communication can be maintained in the event that other means of communication fail e.g. radio transmitter.

Good communications are essential to ensure a safe manriding operation. Using recognised hand signals will continue to reduce the number of incidents that occur in our industry as a result of manriding.

REMEMBER, WINCH OPERATOR MUST KEEP THE MANRIDER IN VIEW AT ALL TIMES

Manriding Hand Signals (continued)

MANRIDING SAFETY



Appendix 3 - Examples of Maintenance/Inspection Check Lists

Frequent Maintenance/Inspection Check List	Date
Visually inspect overall condition of winch. Check winch external structure, motor, control, brakes, limit switch, press roller, drum guard, muffler and slack line detector for damage. Check fittings, screws and nuts. Tighten if loose.	
Check press roller. Ensure that wire rope is always trapped between the press roller and drum barrel.	
Inspect air connections and hoses for leaks and damage. Do not operate winch if any found. Inspect air filter and drain if necessary. Replace element if saturated.	
Check pressure regulator setting. For optimum performance, provide an air supply of 90 psig at the point of entry to the emergency stop valve.	
Check and adjust airline lubricator for correct flow (6-9 drops per minute) under maximum motor speed. Refill bowl with manufacturer's recommended oil if required.	
Lubricate wire rope as needed with appropriate lubricant to ensure smooth performance and prolong service life.	
Ensure that winch has no load. Operate winch and activate E-Stop valve. Ensure that valve operates and winch stops. Reset button and ensure that winch operates.	
Ensure that winch has no load. Release band brake. Operate winch. Ensure that disc brake is functioning cor- rectly - it releases when lever throttle is operated and holds when lever throttle is released. Ensure that the BAND brake is also functioning correctly.	
Ensure that winch has no load. Operate winch in both directions to activate limit switches. Limit switch should engage at established setting +/- 2ft (0.7 m) and stops winch. Reset by shifting winch operating direction. Refer to parts manual for limit switch adjustment.	
Ensure that winch has no load. Check slack line detector. Manually actuate slack wire detector valve. Ensure that winch stops.	
Ensure that winch has no load. Check overload. Operate winch in 'Haul In' position and apply the manual brake. Winch should stop.	
Ensure that winch has no load. Check throttle operation. It should be smooth with no sticking or hesitation. Lever must return to neutral when released.	

Periodic Maintenance Inspection Check List	Date
Inspect winch structure. Check for cracked, deformed and corroded components. Clean corrosion off components and inspect for damage. Replace all damaged components.	
Inspect all fasteners including screws, nuts, cotter pins, etc. Replace if damaged and/or corroded. Tighten if loose.	
Inspect and check the E-Stop valve. Repair or replace if damaged.	
Inspect and check the overload device. Repair or replace if damaged.	
Inspect and check the emergency release valve. Replace if damaged.	
Inspect and check the Slack Wire Detector. Repair if damaged.	
Inspect and check the Press Roller. Repair or replace if damaged.	
Inspect and check the Limit Switch. Repair or replace if damaged.	
Inspect and check the throttle control. Repair if damaged.	
Inspect and check the BAND brake. Replace if required.	
Inspect and check the disc brakes. Repair and replace components as required.	
Inspect and check the air motor. Repair and replace components as required. Replace oil.	
Check all instruction and information labels. Replace if unreadable.	

Note: Manufacturer's instructions with regard to maintenance/inspection must be followed at all times

Appendix 4 -Working at Height Register

As discussed in section 3 a worksite assessment should be undertaken for all foreseeable working at height activities, utilising a Working at Height Planning Matrix tool.

This will provide sites with a documented process for demonstrating ALARP.

Following the assessment a register should be created for all identified working at height activities.

EXAMPLE WORK AT HEIGHT ASSESSMENT REGISTER

Date/Time	Location	Task	Alternative Methods Considered	Assessment Reference Number	Alternative Used (Y/N)	Justification for Selected Method	Approved By

All installations should keep a register of completed work at height matrix assessments, which can be reviewed on a regular basis to ensure they remain current and fit for purpose. The register above is intended to provide a mechanism for achieving this.

This register can also be used as a lateral learning tool to share information with other crews and rigs.

Appendix 5 – Manriding Register

A manriding register should also be kept to allow installations to log agreed and acceptable manriding activities, to allow for regular review and verification of continuing acceptability.

EXAMPLE MANRIDING REGISTER

Date	Time	Location	Task	Time in manriding harness	Time suspended in manriding harness	Permit No.	Approved By

Note: Recommended retention period for manriding documentation is 12 months

Appendix 6 – Rescue Plan

Date:	Task:		Rig Area:					
Indicate in the Check Box the nature of the rescue to be executed if necessary:								
RESCUE FROM HEIGHT		RESCUE FROM C	ONFINED SPACE					

Complete the questions below (Table 1) whether Rescue Plan is for work at height or from confined space:

TABLE 1		YES	NO
1.	Has rescue been fully planned and risk assessed?		
2	Has the method for raising the alarm to initiate rescue been identified State Method:		
3.	Has a competent Standby Man been appointed for the task?		
4.	Has the Rescue Team been briefed about the proposed task?		
5.	In the Rescue Team competent in the use of rescue equipment?		
6.	Is the rescue equipment suitable and adequate for the task?		
7.	Have footings for tripods or anchor points for sheaves and lines been checked and found adequate, appropriately load bearing and suitable for use?		
8.	Has the rescue equipment been maintained, inspected and function tested?		
9.	Has the rescue equipment identified in Table 2 below been located or set up at the worksite?		
10.	Has the Issuing Authority/Department Supervisor or Rescue Team Leader visited the worksite to identify any hazards that may impact the rescue?		

Indicate below the equipment to be used to facilitate the rescue of a casualty(s):

TABLE 2				
Equipment	Select	Equipment	Select	
Ladders		Tripod and Retractable Line		
Via access platforms or walkway		Pad Eye/Beam Clamp with Inertia Reel		
Scaffold		Harness		
Cherry Picker		Radios		
Scissor Lift		Breathing Apparatus		
Manriding Winch		Stretcher		
Utility Winch		Additional Rescue Drawing Written Detail		
Approved Rescue Device		Other:		

Once equipment for rescue has been selected complete the following questions (work must not commence if any of these answers are No):

	YES	NO
Has the Rescue Plan been reviewed by the Department Supervisor?		
Has the Rescue Plan been reviewed by the Rescue Team Leader?		
Are the Task Team and Rescue Team aware of the rescue arrangements and methods to be used?		

The Rescue Plan and associated equipment detailed above is in place and available as necessary

Name:	Position:
Signature:	Date:

Appendix 7 – Donning Manriding Harness



a. After carrying out an inspection of the harness hold the rear dorsal "D" ring and shake the harness and untangle all the webbing and unfasten all the buckles.



b. Establish the position for your arm to pass through via holding the rear dorsal "D" ring and front support webbing strap.



C. Slip the harness on to your shoulder as shown.



d. Ensure the webbing remains untwisted whilst you pass your other arm through to place the harness on your other shoulder.



e. Ensure the harness is positioned correctly on the shoulders and the dorsal "D" ring is in the correct position.



f. Adjust the shoulder straps by pulling or releasing the slack end so the sub-pelvic strap is firmly placed under the buttocks.

Warning:-

The life span of a harness is a maximum of ten years from the date of manufacture or a maximum of five years from date of first utilisation on site.

Donning Manriding Harness (continued)



g. Pull each thigh strap through the legs and fasten the male buckle through the female buckle.



h. Adjust tension by pulling or releasing the slack end of the strap.



i. Repeat for other leg.



j. Adjust both straps tension by pulling or releasing the slack end of the strap.



k. Fasten the chest strap male buckle through the female buckle and adjust so that the shoulder straps are centred on each shoulder.



I. Individually adjust each torso strap by pulling or releasing the slack end so that the dorsal "D" ring is in the centre of the operatives back and the sub-pelvic strap is firmly placed under the buttocks. Ensure that the plastic loops are positioned at the far ends of any straps.

Appendix 8 – Examples of Wire Damage



Appendix 9 – Snubby Line



If a tugger hook is accidentally placed under a load when attached to a deck anchor point or handrail it could result in anchor failure or damage to the tugger wire. To help prevent potential damage and injury a Snubby Line weak-link safety device can be used. A Snubby Line is designed to:

- Progressively tear when load is applied.
- Open in length until it separates.
- Deploy a bright web strap as it opens to warn the operator or personnel in the immediate area.

A Snubby Line should be used in line with the manufacturer's instructions and be removed from service after being deployed, or if damaged in any way.



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