ROPED RPM SYSTEMS

MACHINERY DIRECTIVE 2006/42/EC SPECIFICATION

F509/QA/Nov.2016
SW212 / 222
SW222 / 222

CONTENTS

01 GENERAL INFORMATION

General Warning

Warning! Working at height, rock climbing, mountaineering and related activities are inherently dangerous. It is the responsibility of any person using this equipment to learn and practice the proper techniques for use of the equipment for its designated purposes safely and to foresee and take appropriate action in situations where rescue may be required. Even the correct use of equipment and techniques may result in fatal consequences. Medical conditions can affect the safety of the equipment user in normal and emergency use. Any person using this equipment assumes all risks and full responsibility for all damages or injury which may result from the use of it. It is impossible to cover all methods of use. The following instructions and pictograms show some of the common correct and incorrect methods of use; it is impossible to predict them all.

Methods shown in this specification are not exhaustive. Other methods must be designed and approved by a competent person. There is no substitute for instruction by a trained and competent person.

Description

The RPM System is a high strength, modular system that can be used to gain mechanical advantage and increased efficiency whilst lifting, lowering, moving, or controlling a load. The load may be a person/persons, and must always be within the WLL specified.

Specification

This specification must be read in conjunction with the DMM RPM System User Instructions: F506

- Requires 6mm Hex key for assembly
- Requires circlip pliers for assembly
- Torque wrench Hex key Nyloc nuts to 10Nm
- Torque wrench Hex key end cap nuts to 5Nm
- Available in 15m or 30m rope length versions

- Minimum Breaking Strength = 50kN. See RPM System user instructions
- Working Load Limit = 10kN. See RPM System user instructions
- Compact system – only 32cm from end to end when compressed
- Minimum Breaking Strength of Sirius 10mm rope = 24kN
- Minimum Breaking Strength of Ocean Vectran 6mm Prusik rope = 12kN
- The RPM system is certified using 10mm Sirius rope (RP920BK-XX) and 6mm Ocean Vectran Prusik rope (SW280)

Lifespan of Ropes

10mm Sirius Rope (RP920BK-XX)

- 5 years maximum lifespan from date of manufacture

6mm Ocean Vectran Prusik Rope (SW280)

- 5 years maximum lifespan from date of manufacture, if stored in sealed UV resistant bag
- 2 years maximum lifespan in use, due to UV degradation

Warning Regarding Vectran Rope

Note that Vectran ropes have a high melting point making them suitable for Prusik knots but a low resistance to UV giving them limited lifespan in use.

A recognised stopper knot must be used. DMM recommend a two wrap barrel knot 50cm from the end of the control rope.

Key to Symbols

Function Test

A function test of the system must be carried out before each use to ensure correct function of Prusik and assembly.

Speed of Operation

A safe operating speed of 1m/s on the control rope must not be exceeded.

Anchors

The anchorage point of the system should conform to EN795:2012 or have a minimum strength of 15kN. Anchor strengths must be passed by a competent person and be suitable for use with predicted loads and within the capacity of the system.

02 CONFIGURATIONS

For operation see section 3

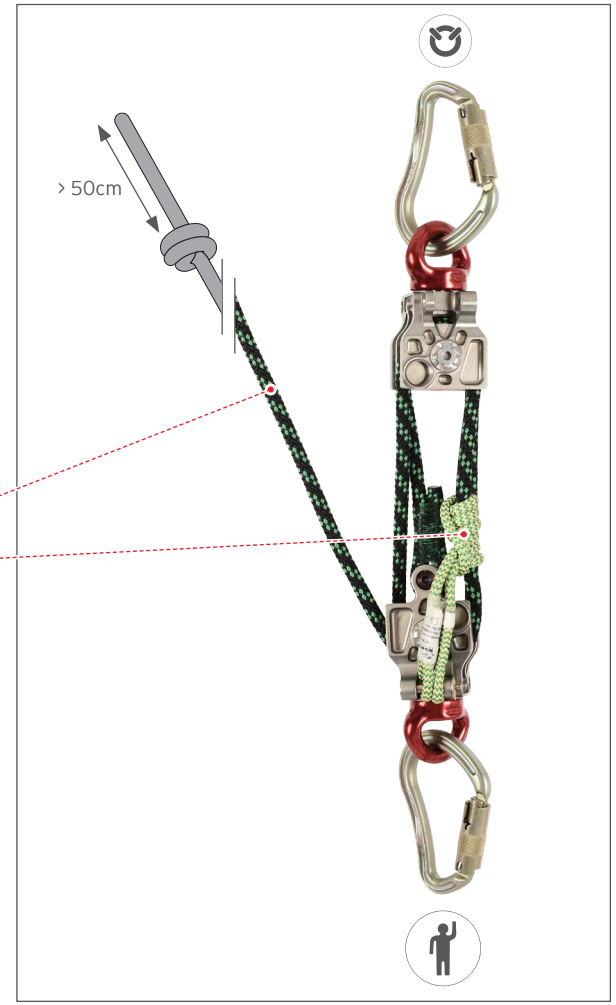
2.1

Standard configuration with top Prusik.

› Requires good communication between operator and rescuer/load, as rescuer not in control of descent.

2.2

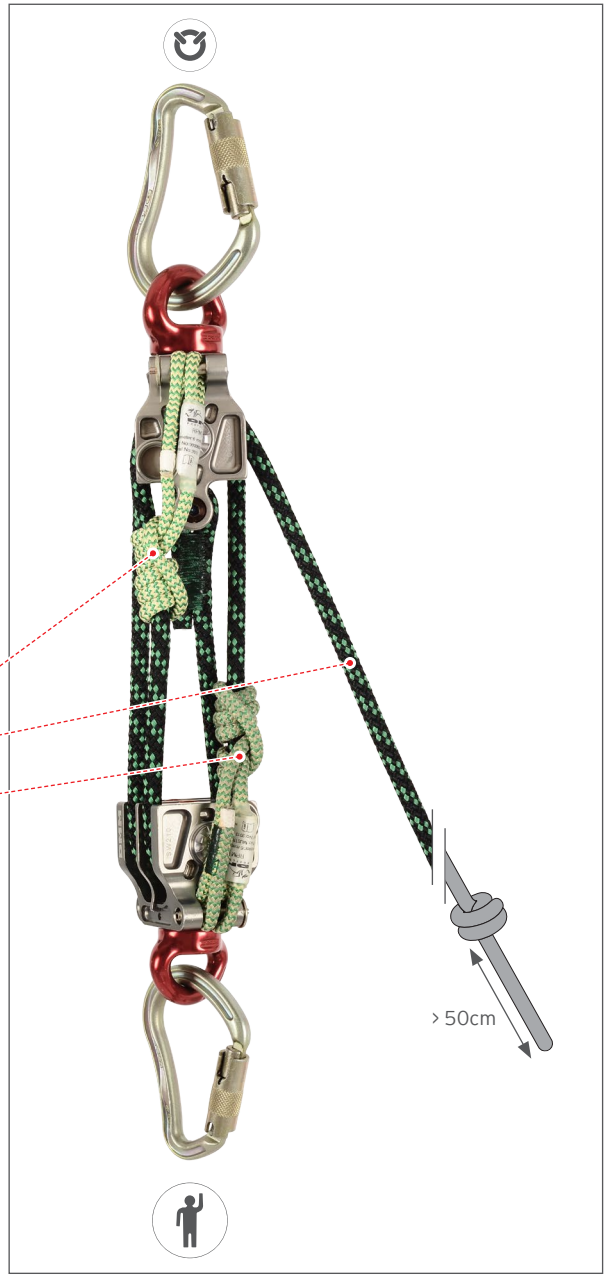
Standard configuration with bottom Prusik.



2.3

Standard configuration with top and bottom Prusik.

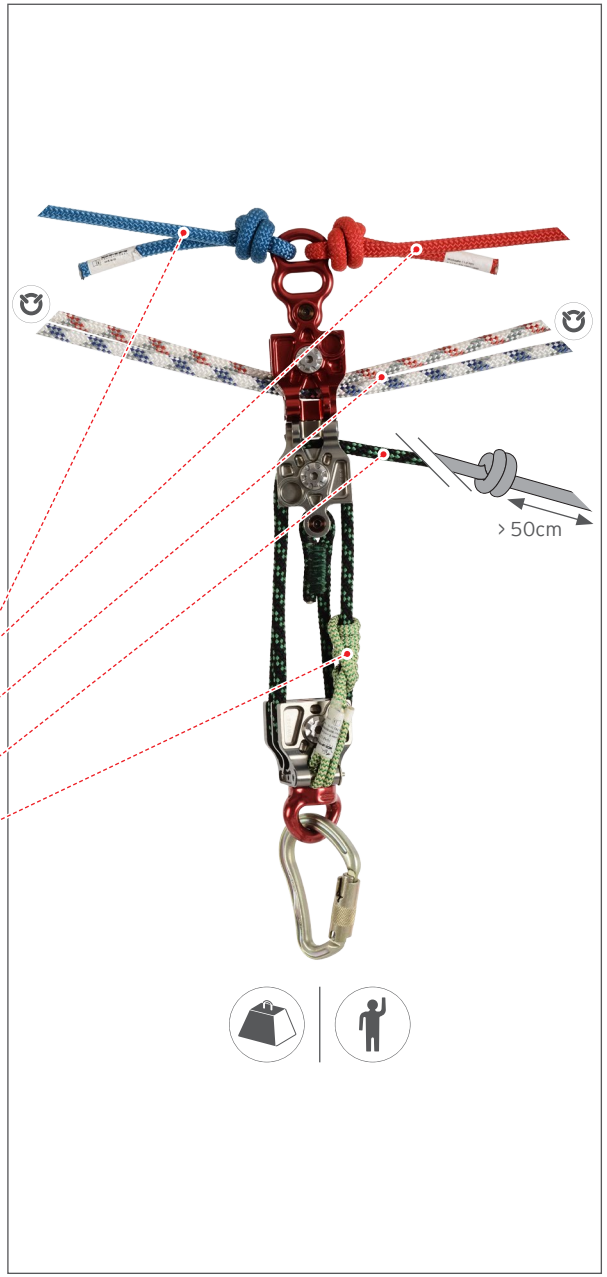
- Both operator and rescuer need to control Prusik for descent.
- If either person releases the Prusik, descent will stop.
- Effective in situations where communication is difficult as in an emergency the top operator can only haul the rescuer up, they cannot lower without co-operation from the rescuer.



2.4

Twin body configuration.

- Designed to run on 2 x ropes Max 11mm diameter, or 1 x rope Max 16mm diameter as a tramway.
- Rope friendly radii on rigging plate for direct connection.



03 OPERATION

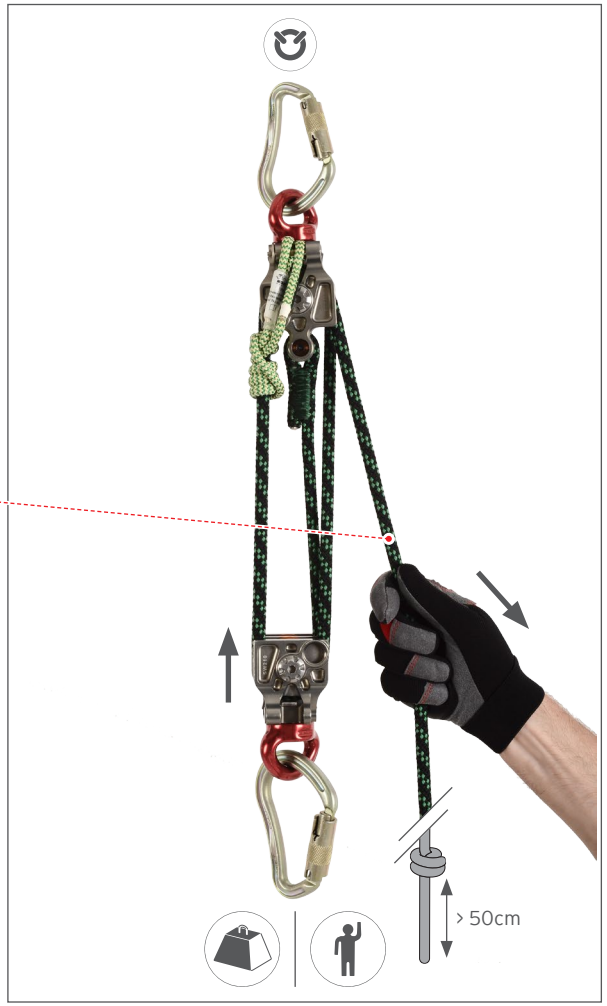
3.1

To extend (lower) the assembly the Prusik must be released.

› When this occurs the rope MUST be managed at all times by the operator.

3.2

To compress (haul) the assembly the control rope must be pulled.

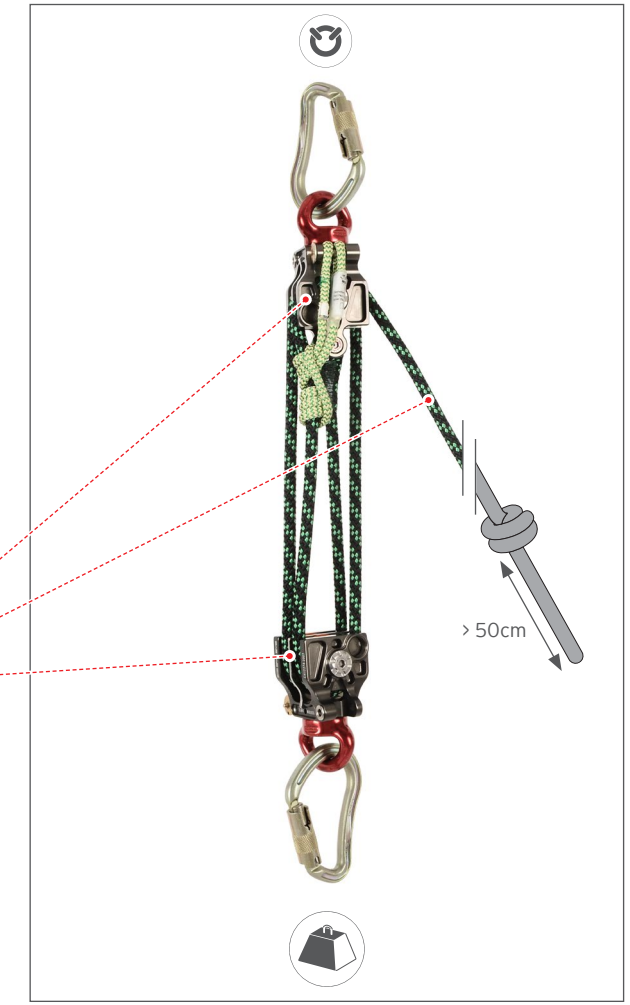


04 LOADING

4.1

'Disadvantaged' system.

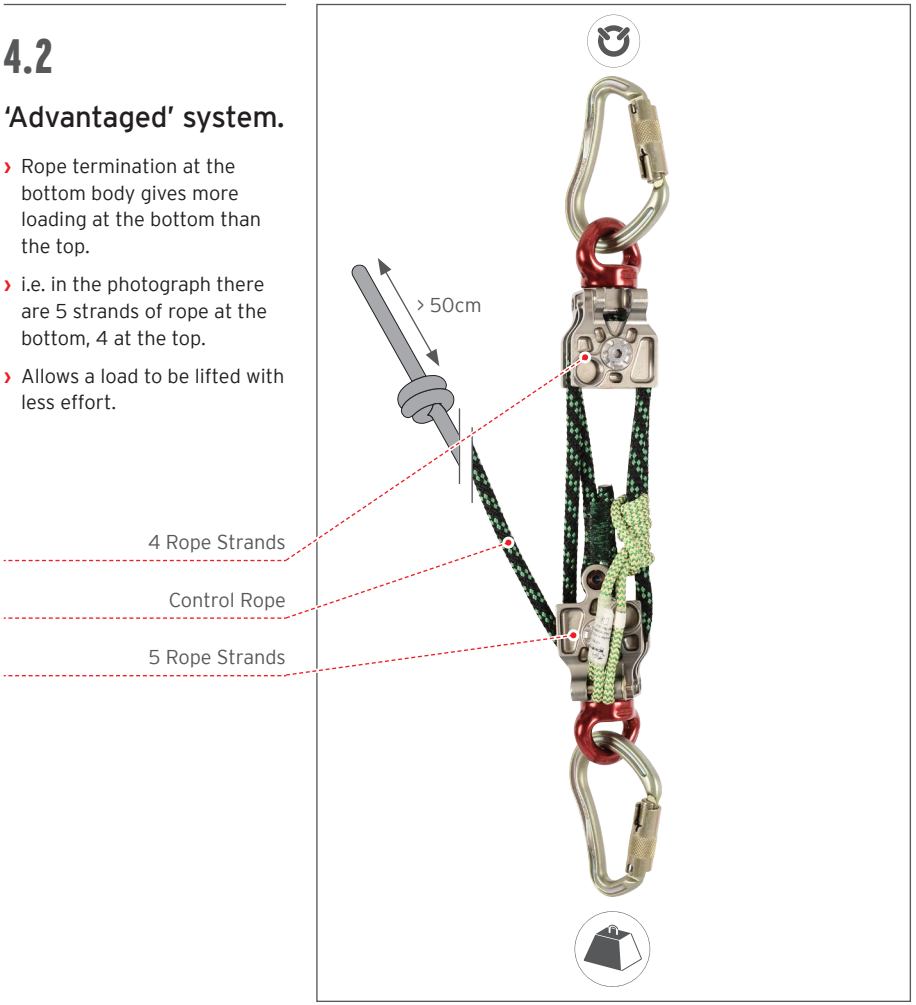
- More load at top anchor than bottom, due to rope termination being attached at the top body.
- i.e. in the photograph there are 5 strands of rope at the top, 4 at the bottom.
- Typically used for lowering a **rescuer** - due to control at the top.



4.2

'Advantaged' system.

- Rope termination at the bottom body gives more loading at the bottom than the top.
- i.e. in the photograph there are 5 strands of rope at the bottom, 4 at the top.
- Allows a load to be lifted with less effort.

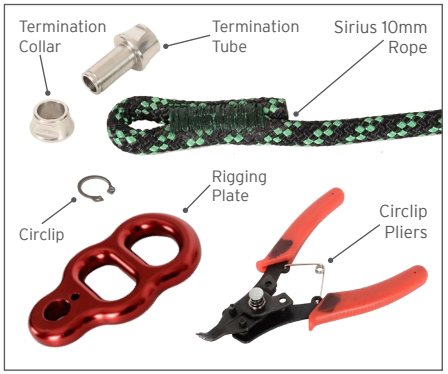


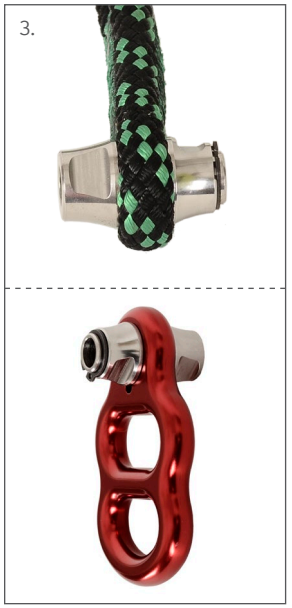
05 ASSEMBLY

5.1

How to attach Termination Cartridge (SW260) to Sirius 10mm rope (RP920BK-XX) or Rigging Plate (SW250-01RD).

- Circlip must be attached in use.
- Circlip pliers must be used for assembly.





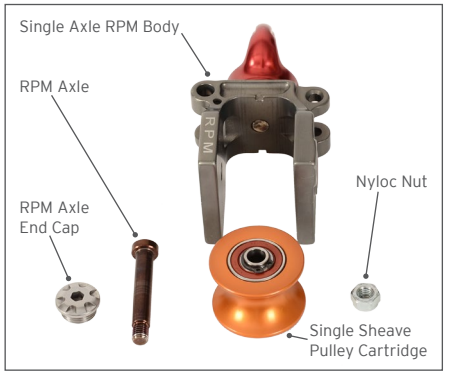
5.2

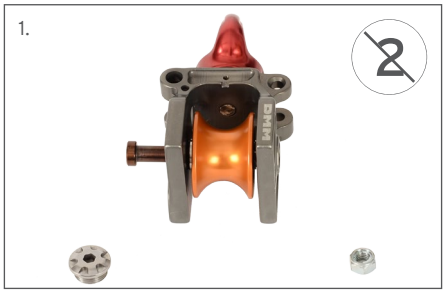
How to install cartridge into all bodies.

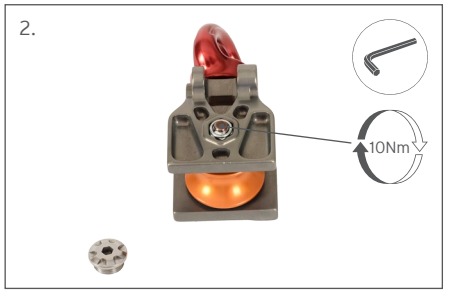
5.2.1

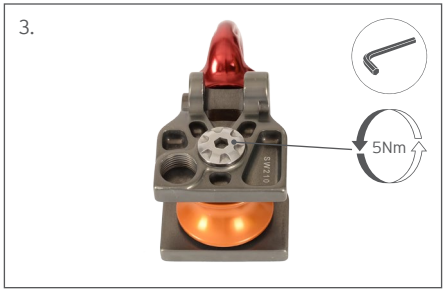
Single axle, single sheave.

- Nyloc nut and Hex key bolt must be torqued to 10Nm.
- RPM Axle End Cap must be in place. The end cap has a **left hand thread** for security and must be torqued to 5Nm.





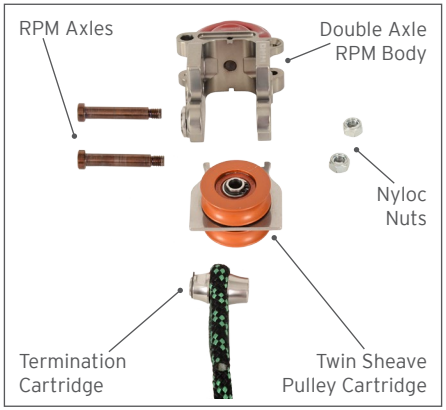


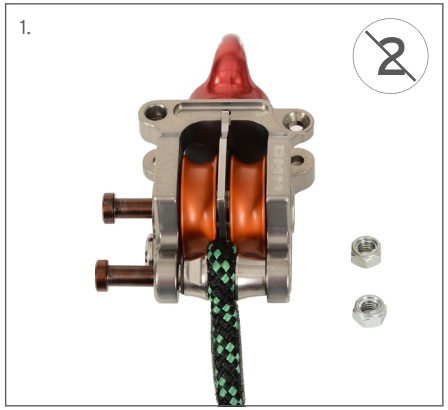


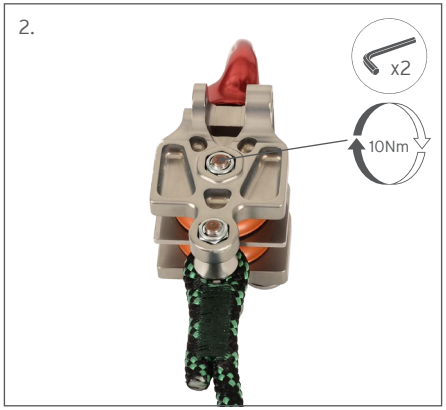
5.2.2

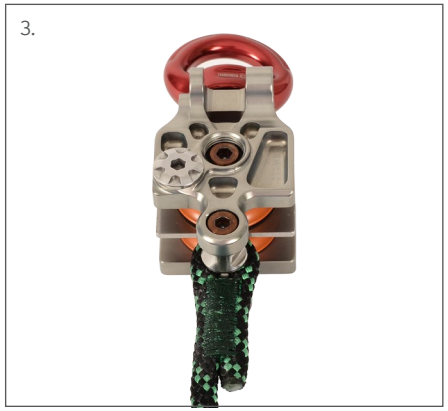
Double axle, double sheave.

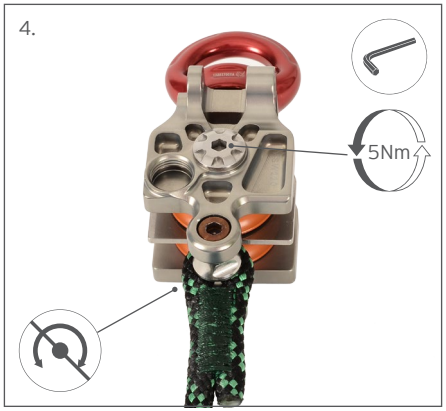
- Both Nyloc nuts and Hex key bolts to be torqued to 10Nm
- RPM Axle End Cap must be in place. The end cap has a **left hand thread** for security and must be torqued to 5Nm
- Note end cap storage location in image 3











5.3

How to reeve rope onto cartridges and assemble the RPM bodies.

- Nyloc nuts must be torqued to 10Nm.
- RPM Axle End Caps must be torqued to 5Nm.

1. Assemble rope to cartridges

2. Attach top body to cartridge

3. Attach rope termination cartridge to top body

4. Attach bottom body to system

5.4

How to tie '2 + 4 Schwabisch' Prusik knot.

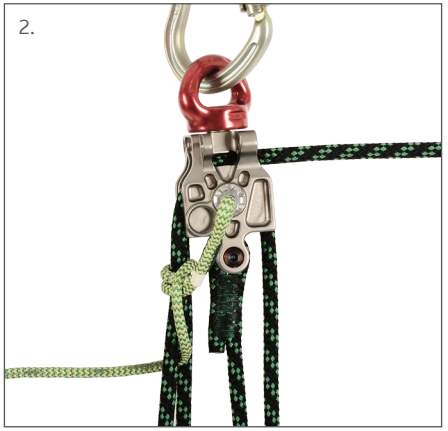
- The '2' of the '2+4' loops must be closest to the RPM body.
- Pip pin (SW210-12) to secure the Prusik must be correctly fitted.
- Ropes are best run over the end cap side of the body, rather than the bolt head side.

Images.

- Stage 1 - 6: Tie knot.
- Stage 7: Dress and attach knot.
- Stage 8: Set knot and test with minimum 20kg mass.

1.

2.



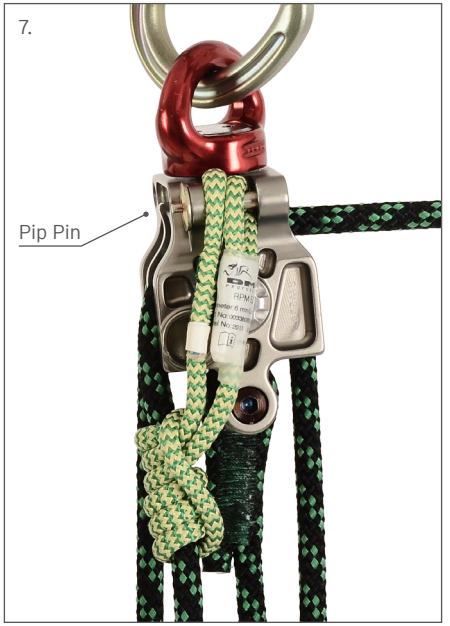
3.

4.

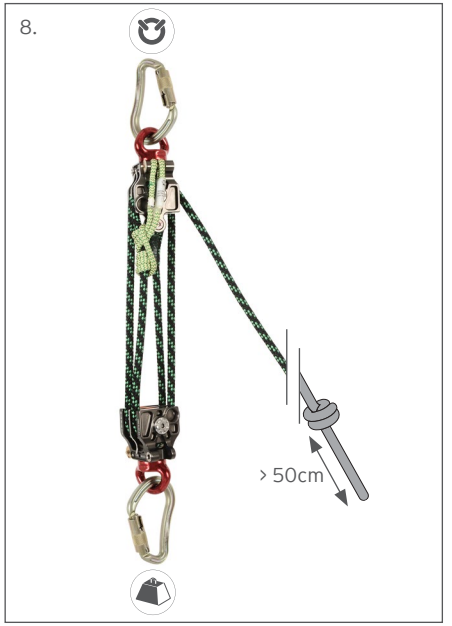
5.

6.

7.



8.

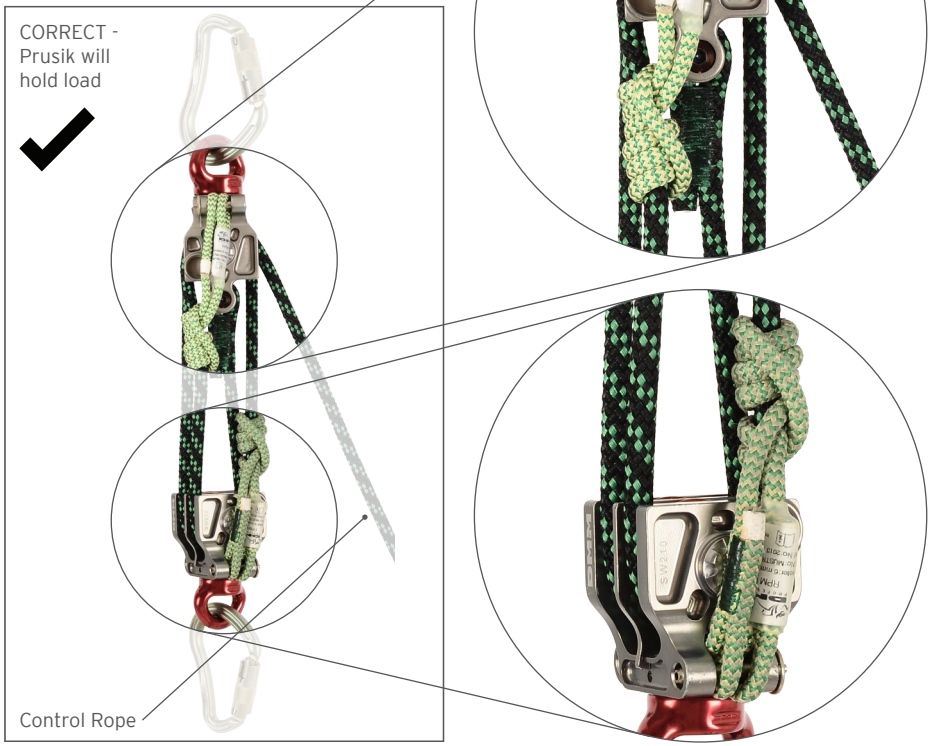


06 POTENTIAL MISUSES OF THE RPM SYSTEM

6.1

DO NOT install Prusik on the control rope.

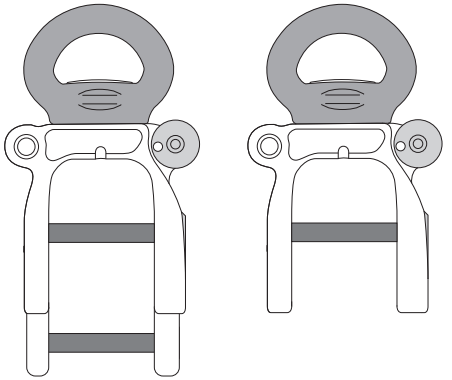
› Other configurations to those shown below are incorrect.

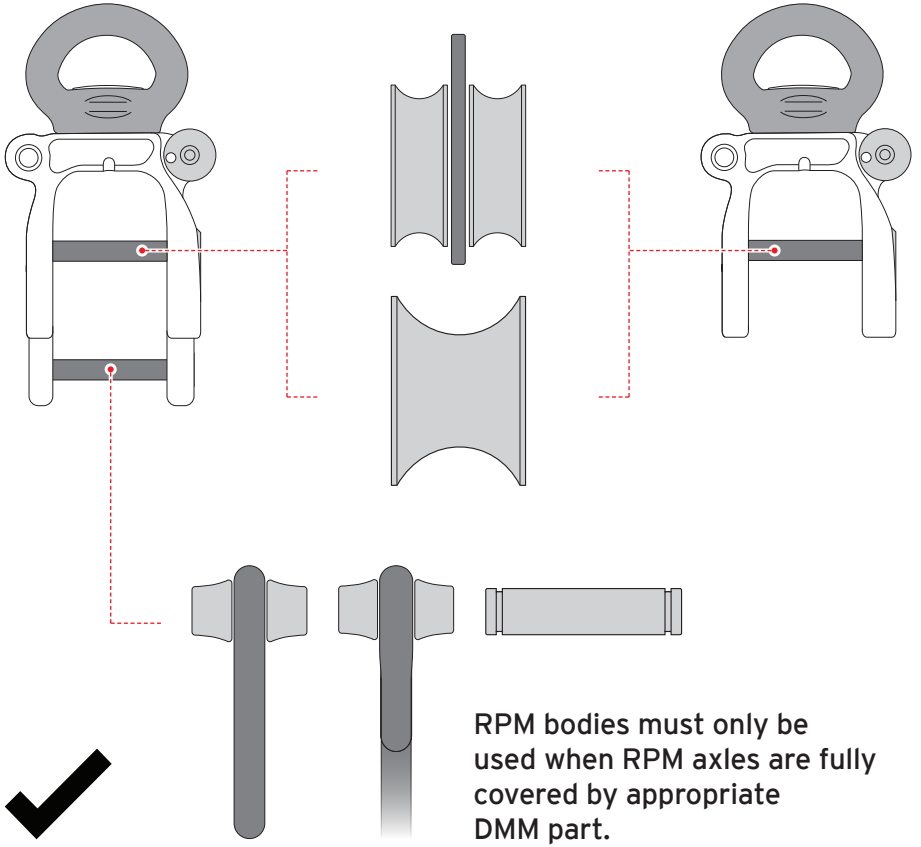


6.2

DO NOT use without axle covering.

› Rotational forces may loosen nuts if RPM bodies are used when RPM axle is not covered with appropriate DMM part.





RPM bodies must only be used when RPM axles are fully covered by appropriate DMM part.

07 INCORRECT TECHNIQUES

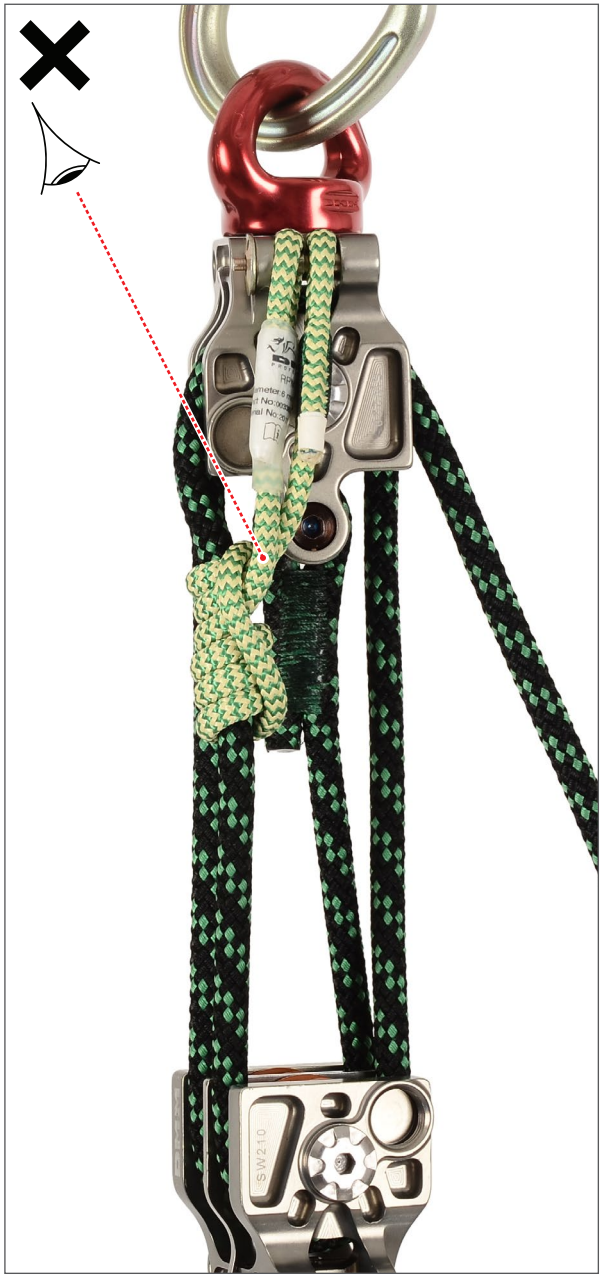
7.1

Correct technique.

7.2

Prusik knot ‘legs’ should not be crossed.

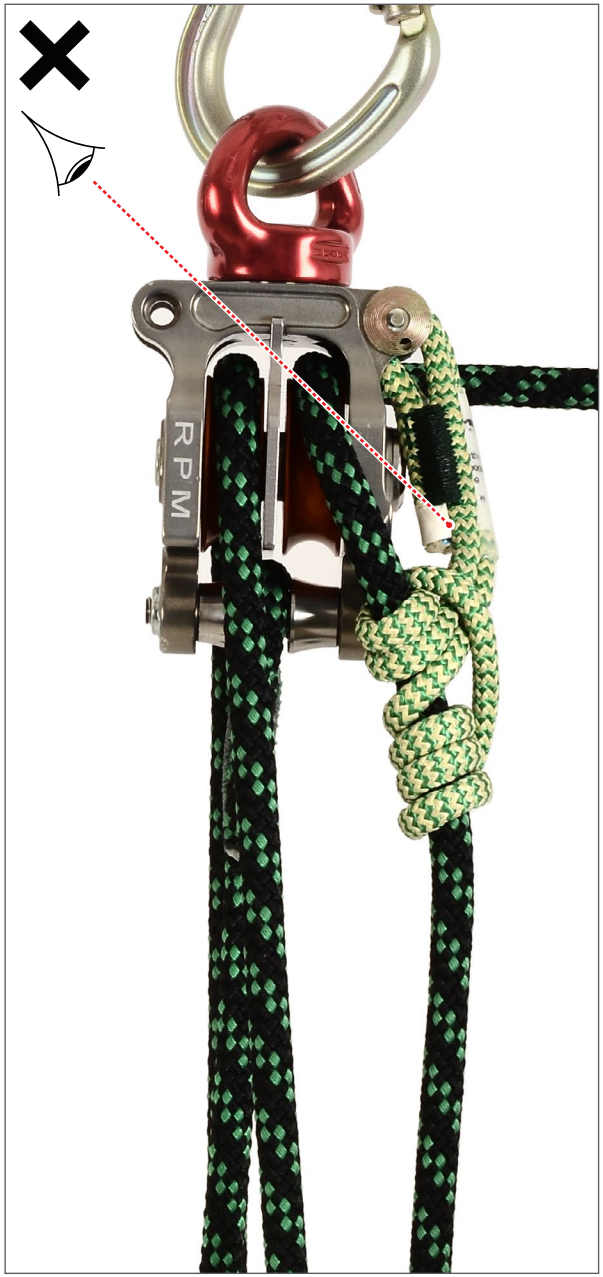
› Image shows ‘legs’ of knot to be crossed between knot and pin.



7.3

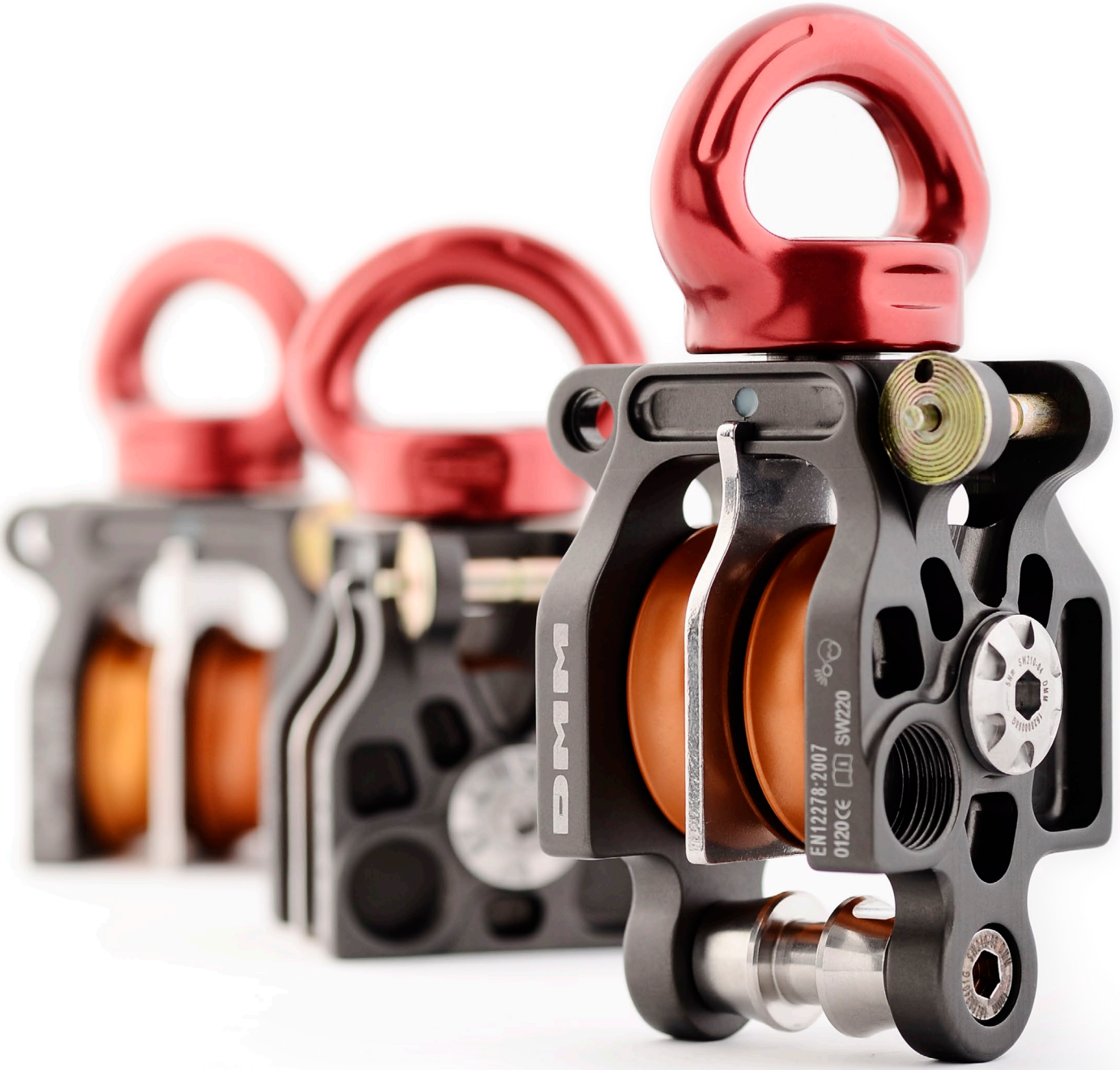
Prusik termination tails should not be adjacent to the body.

› The termination tails should ‘face’ away from the body.



08 PARTS LIST

CODE	DESCRIPTION
Roped RPM Systems	
SW212/222-15	15m Roped RPM System
SW212/222-30	30m Roped RPM System
SW222/SW222-30MG	30m Roped Military RPM System
RPM Assemblies	
SW210	Single Axle RPM Body
SW212	Single Axle RPM
SW220	Double Axle RPM Body
SW222	Double Axle RPM
SW230	Twin Body RPM
Cartridges	
SW230	RPM Single Sheave Pulley Cartridge
SW240	RPM Twin Sheave Pulley Cartridge
SW260	RPM Rope Termination / Rigging Plate Cartridge
SW250-01RD	RPM Rigging Plate
SW240-03P	RPM Webbing Termination Cartridge
Components / Spares	
SW210-12	RPM Pip Pin
SW210-03P	RPM Axle
SW210-11	RPM Axle M8 Nylock Nut
SW210-04P	RPM Axle End Cap
SW240-34	RPM Circlip
RP920BK-15	15m DMM 10mm Sirius Rope
RP920BK-30	30m DMM 10mm Sirius Rope
SW280	65cm DMM E2E 6mm Heat Resistant Prusik
BI21BLK-4	DMM Tool Bag (4L) Black
BI21BLK-6	DMM Tool Bag (6L) Black


DMM
EN12278:2007
0120CE
SW220

DMMWALES.COM

Llanberis
Gwynedd
Wales
United Kingdom
LL55 4EL

General enquiries: +44 [0]1286 872 222

Fax: +44 [0]1286 872 090

Email: post@dmmwales.com