



Safety Rope Switches from IDEM

Data Sheet

Guardian Line Series



Heavy Duty Types: GLHD (Dual Head)
GLHD-SS (Dual Head)



GLHR/L (Single Head)
GLHR/L-SS (Single Head)



Standard Duty Types: GLS
GLS-SS



Mini Duty Type: GLM
GLM-SS

Using Safety Rope Emergency Stop Switches

Application:

Safety Rope Emergency Stop Switches are mounted on machines and sections of plant conveyors which cannot be protected by guards. In contrast to traditional mushroom head type Emergency Stop buttons, Safety Rope Switches can initiate the emergency command from any point along the installed rope length. In combination with any dual channel safety monitoring controllers IDEM Safety Rope Systems can be used as emergency stop devices and monitored for up to Category PLe/Cat.4 to ISO13849-1. It is the responsibility of the user to ensure the correct overall functionality of its systems and machines. IDEM, its subsidiaries and affiliates, are not in a position to guarantee all of the characteristics of a given system or product not designed by IDEM.

Operation:

All IDEM Safety Rope Emergency Stop Switches conform to Standards ISO13850 and IEC60947-5-5. They have a positive mechanical linkage between the switch contacts and the wire rope as per IEC60947-5-1. The emergency stop switches are brought into the operational condition by pre-tensioning the rope by use of a tensioner/gripper device which clamps the rope and then hooks to the switch eyebolts. Correct tension can be observed by viewing the tension indicator on the switch housing. Once tensioned the switch contact blocks can be set to the operational condition (safety contacts closed, auxiliary contacts open) by pressing a blue reset button on the switch cover.

All of the Safety Rope Switches have wire-breakage monitoring. On pulling or breakage (tension loss) of the rope, the safety contacts are positively opened and the auxiliary contacts are closed. The switches are mechanically latched and can then only be returned to the operating condition by pressing the reset button as required by ISO13850.

Installation Guide:

1. Installation of all IDEM Safety Rope Switch systems must be in accordance with a risk assessment for the individual application. Installation must only be carried out by competent personnel and in accordance with these instructions.
2. According to ISO13850 pulleys may only be mounted such that a complete length of the rope can be observed.
3. Rope support eyebolts must be fitted at 2.5 m. min. to 3m. max. intervals along all rope lengths between switches. The rope must be supported no more than 500mm from the Switch eyebolt or Safety Spring (if used). It is important that this first 500mm is not used as part of the active protection coverage.
4. M5 mounting bolts must be used to fix the switches. Tightening torque for mounting bolts to ensure reliable fixing is 4 Nm. Tightening torque for the lid screws, conduit entry plugs and cable glands must be 1.5 Nm to ensure IP seal. Only use the correct size gland for the conduit entry and cable outside diameter.
5. Tensioning of rope is achieved by use of IDEM tensioner/gripper assemblies.

On installation set the tension to the mid position as indicated by the markers in the viewing window of each switch. Check operation of all switches and the control circuits by pulling the rope at various locations along the active protection area and resetting each switch by depressing the Blue Reset button. Ensure each time that the switches latch off and require manual resetting by depressing the blue reset button. Increase the system tension further, if required, depending upon the checks along the active length of coverage.

If fitted with a Mushroom type E-Stop button (Red) then test and reset each switch to ensure correct function of the safety control circuits.

Typical operational condition for successful operation of the system is less than 75N. pulling force and less than 150mm deflection of rope between eyebolt supports.

6. Maintenance:

Every Month: Check correct operation of system at locations along all coverage length. Check for nominal tension setting, re-tension rope if necessary. *Every 6 Months:* Isolate power and remove cover. Check screw terminal tightness and check for signs of moisture ingress. Never attempt to repair any switch.

Original Instructions.

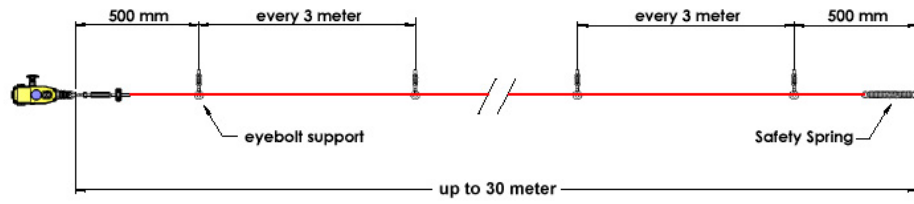
To request this data sheet in other languages please contact info@idemsafety.com Um dieses Datenblatt in Deutscher Sprache wenden Sie sich bitte anfordern info@idemsafety.com Pour obtenir cette fiche en Français, veuillez contacter info@idemsafety.com Para solicitar esta hoja de datos en Español, por favor contacto con info@idemsafety.com



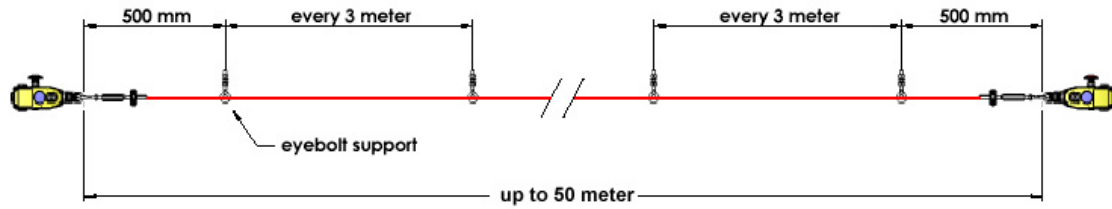
WARNING: DO NOT DEFEAT, TAMPER, OR BYPASS THE SAFETY FUNCTION. FAILURE TO DO SO CAN RESULT IN DEATH OR SERIOUS INJURY.

AVERTISSEMENT: NE PAS DESACTIVER, MODIFIER, RETIRER, OU CONTOURNER CETI INTERVERROUILLAGE IL PEUT EN RESULTER DES BLESSURES GRAVES DU PERSONNEL UTILISATEUR.

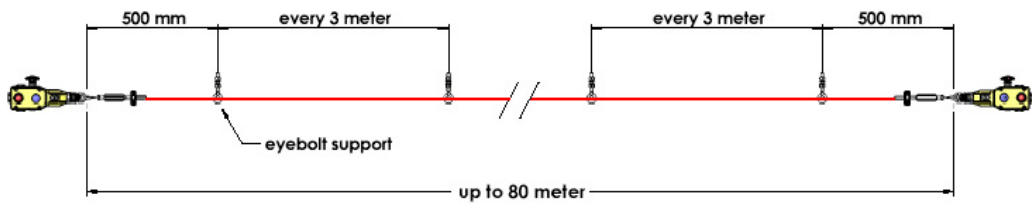
7 Recommended rope span options and fittings - (subject to an individual risk assessment for the installation):



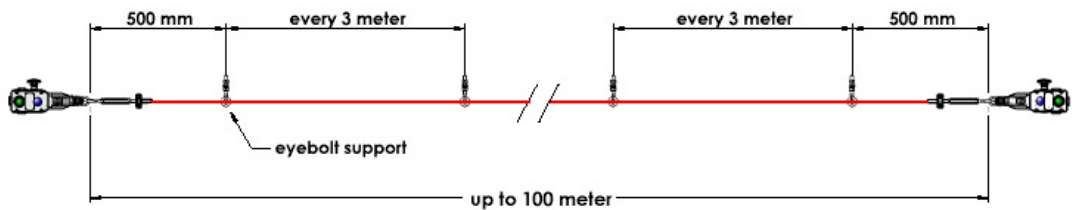
GLM 30m.
with Safety Spring



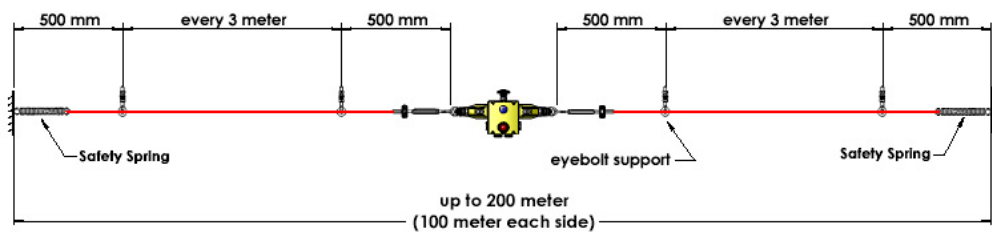
GLM 50m.



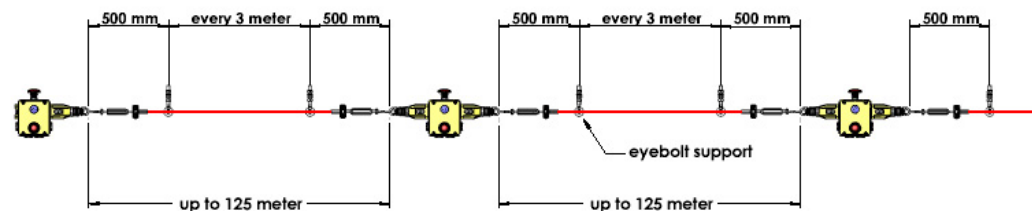
GLS 80m.



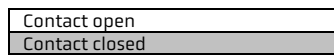
GLS-SS 100m.



GLHD 200m.
with Safety Springs



GLHD/L/R 250m.



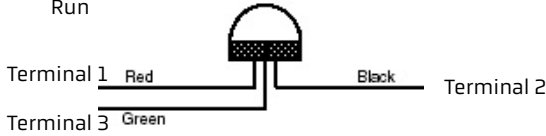
0mm 3.5mm 14.5mm 170mm

Typical operating conditions:

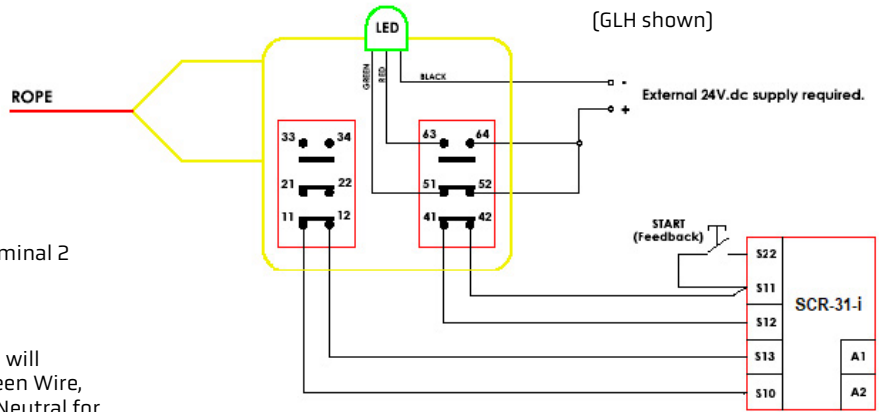
| EX | 2NC 1NO | 3NC 1NO | 2NC 2NO | 4NC | 4NC 2NO | Latched off – Rope Slack | Tension Range (Switch Reset) | Rope Pulled |
|----|---------|---------|---------|-------|---------|--------------------------|------------------------------|-------------|
| NC | 11/12 | 11/12 | 11/12 | 11/12 | 11/12 | | | |
| | 21/22 | 21/22 | 21/22 | 21/22 | 21/22 | | | |
| | | 31/32 | | 31/32 | 41/42 | | | |
| | | | | 41/42 | 51/52 | | | |
| NO | 33/34 | 43/44 | 33/34 | | 33/34 | | | |
| | | | 43/44 | | 63/64 | | | |

8. Wiring examples:

LED RED Flashing or Steady:
Stopped LED GREEN Steady:
Run

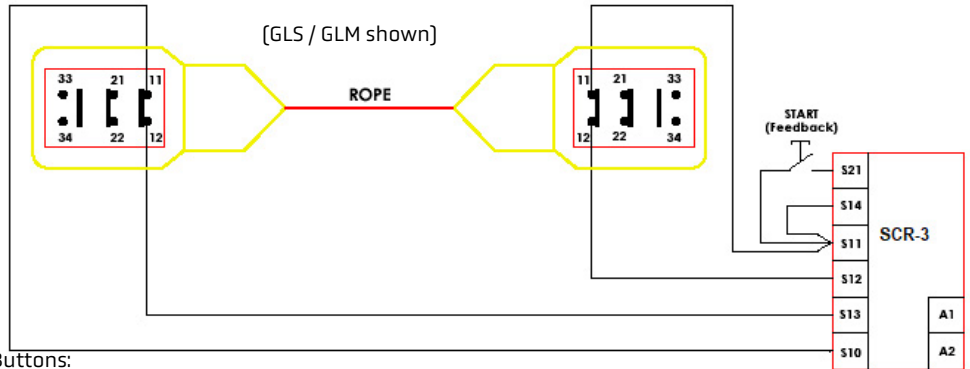
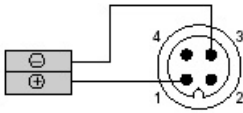


When power is applied to the Red wire, the lamp will illuminate Red. When power is applied to the Green Wire, the Lamp will illuminate Green. Black is 0V.d.c or Neutral for 110Vac and 230Vac versions.



Optional ASi Safe versions:

AS-I profile : S-7.B.E
ID configuration / ID code : 7(Hex) / B.E(Hex)



9. To fit Mushroom type Emergency stop Buttons:

- Remove M12 threaded plug from the mounting port.
- Apply thread locking solution to the threads of the E Stop mechanism.
- Insert the Emergency Stop Mechanism into the mounting port and tighten to 1.5Nm.
- After installation test and reset to ensure all safety circuits are functioning correctly.



10. Technical Specifications

| | | |
|--------------------------------------|---|-------|
| Standards: | IEC 60947-5-1 IEC60947-5-5 | UL508 |
| Approvals: | 5013850-1 5013849-1 | |
| Mechanical Features: | Enclosure / Cover Die-Cast – Painted Yellow | |
| | External Parts Stainless Steel | |
| | IP Rating IP67 (IP69K S/Steel versions). | |
| | Rope Spans Dual Head 250m. | |
| | Rope Tension device IDEM Tensioner / Gripper – Quick Fixing | |
| | Rope Type: 4.0mm Outside Dia. Steel inner-PVC sheath | |
| | Mounting 4 x M5 | |
| | Mounting position | |
| | Conduit entries 4 x M20 or 4 x 1/2" NPT by part number | |
| | Torque settings Mounting M5 4.0 Nm | |
| | Lid T20 Torx M4 1.5 Nm | |
| | Terminals 1.0 Nm | |
| Ambient Temperature | -25C. 80 C. [-40C. for -FZ versions]. | |
| Resistance | 10-500Hz 0.35mm | |
| Static resistance | 15g 11ms | |
| Tension Force (typical mid) | 130N. | |
| Operating Force (Rope pulled) | < 125N. < 300mm Deflection | |
| Approx. Weight | GLHD-SS 2200g. GLHL / R-SS 2000g. | |
| | GLHD 1320g. GLHL / R 1100g. | |
| | GLS 880g. GLS-SS 1635g. | |
| | GLM 675g. | |

| | | |
|--------------------|-----------------------------------|--|
| Electrical: | Safety Contact type | IEC 60947-5-1 Double break Type Zb |
| | Contact Material | Silver |
| | Termination | Clamp up to 2.5 sq. mm conductors |
| | Rating | Utilisation Category : AC15 |
| | Operational Rating | AC15 A300 240V. 3A /120V 6A. ac 24V. 2.5A dc inductive |
| | Thermal Current [Ith] | 10A |
| | Rated Insulation Voltage [Ui] | 500V. |
| | Withstand Voltage [Uimp] | 2500V. |
| | Short Circuit Overload Protection | Fuse Externally 10A. [FF] |

Optional Explosion Proof Contacts

| | |
|----------------------------|----------------------------------|
| Type | IDEM LS-EX internal switch |
| EC Type Certificate Number | Baseefa11ATEX0267X |
| IEC Certificate | IECEx BAS11.0133X |
| Classification | Ex d IIC T6 [-20C Ta 60C] Gb |
| | Ex tb IIIC T85C [-20C Ta 60C] Db |
| Zones | 1, 21, 2, 22 |
| Rated Voltage | 250V ac/dc |
| Rated Current | 2 pole 4A. 4 pole 2.5A. |

Safety Classification and Reliability Data:

| | |
|----------------------------|--|
| Mechanical Reliability | B10d |
| | ISO13849-1 |
| | ISO 13849-1 |
| | EN 62061 |
| Safety Data - Annual Usage | 1 x 10% operations at 100mA load up to Category 4 with Safety Relay up to PLe depending upon system architecture up to SIL3 depending upon system architecture 8 cycles per hour / 24 hours per day / 365 days MTTFd 214 years |

Information with regard to UL 508:

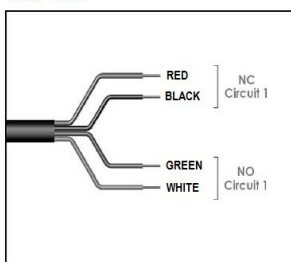
Type 1 Enclosures. Temperature rating 80C.
Use 16 - 12AWG copper conductors, rated 75°C only.
Intended for same polarity use and one polymeric conduit connection. Electrical Rating: A300 240V.ac 3A. [6,000 cycles] 1 60A. Making 6A. Breaking PF >0.38 [100,000 cycles] 240V. 10A. carry only.
Wire range: 16AWG - 12AWG Copper Torque 7lb/in [0.8Nm] LED powered by LVLC or Class 2 only.
Earth bonding terminal inside enclosure if required.

Information with regard to AS/NZS 4024.3610:

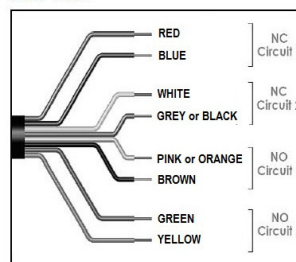
- Perpendicular Force to operate the switches midway between Eyebolt supports: Check <70N.
Rope Deflection <300mm
- Axial Force - Direct along rope axis: <230N. [Typical 125N].

PRE-WIRED EX VERSIONS:

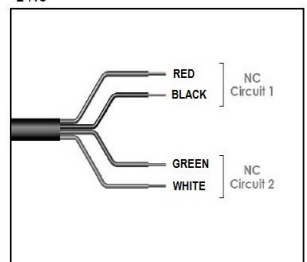
1 NC 1 NO



2 NC 2 NO

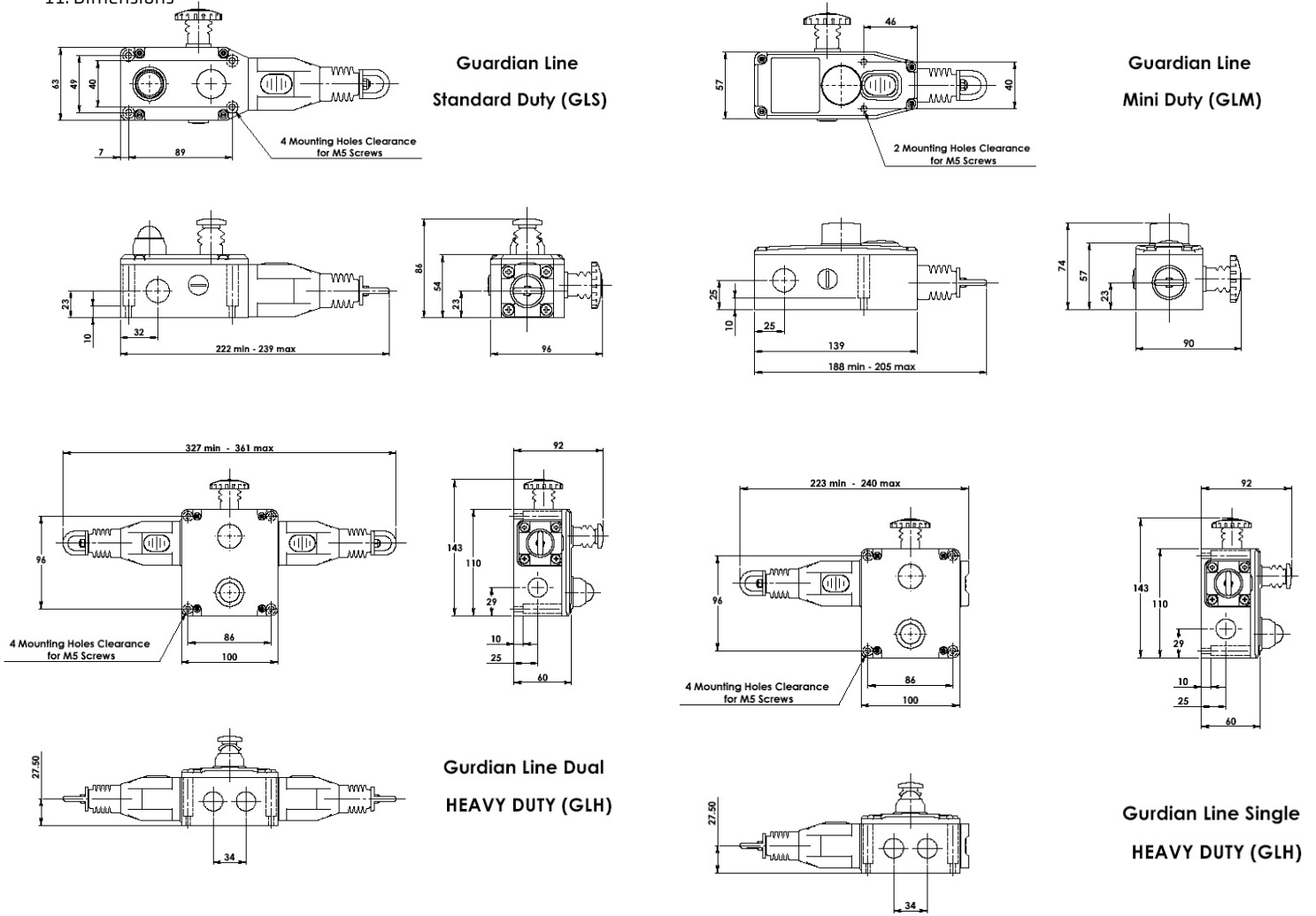


2 NC



IMPORTANT- SPECIFIC CONDITIONS OF USE FOR EX VERSIONS: THE INTEGRAL CABLE SHALL BE SUITABLY PROTECTED FROM PHYSICAL DAMAGE AND ABRASION. THE INTEGRAL CABLE IS TO BE TERMINATED IN A SUITABLE TERMINAL FACILITY.

11. Dimensions



12. Accessories



| Sales Number | Description | Rope | Eyebolts | Tensioner Gripper S/S | Allen Key |
|---------------|----------------|---------------|----------|-----------------------|-----------|
| 140001 140010 | 5M Rope Kit | 5M QL | 3 | 1 | 1 |
| 140002 140011 | 10M Rope Kit | 10M QL | 5 | 1 | 1 |
| 140003 140012 | 15M Rope Kit | 15M QL | 7 | | |
| 140013 | 20M Rope Kit | 20M QL | 9 | 1 | 1 |
| 140005 140014 | 30M Rope Kit | 30M QL 12 | | 1 | 1 |
| 140006 140015 | 50M Rope Kit | 50M QL 20 80M | | | |
| 140007 140016 | Rope Kit | 80M. | 30 | 2 | 2 |
| 140008 140017 | 100M Rope Kit | 100M. | 37 | 2 | 2 |
| 140009 140018 | 125M Rope Kit | 126M. | 45 | 2 | 2 |
| 140033 | Rope only 5M | | | | |
| 140034 140036 | Rope only 10M | | | | |
| 140037 140038 | Rope only 20M | | | | |
| 140039 140040 | Rope only 30M | | | | |
| 140041 | Rope only 50M | | | | |
| | Rope only 80M | | | | |
| | Rope only 100M | | | | |
| | Rope only 126M | | | | |

| Sales Number | Description |
|---|---|
| 140019 140020 | Rope Tensioner / Gripper Stainless Steel Rope Tensioner / Gripper Galvanised Steel |
| 140021 140064 | 77mm Long 40mm High Fixing Hole centres 20mm Universal Pulley Stainless Steel Universal Pulley Galvanised |
| 140045 140046 | 84mm Long Thread 51mm M8 x 1.25 length Eyebolt Stainless Steel Eyebolt |
| Standard Bezel 140042-A 140042-B 140042-C 140132-AS 140132-BS 140132-CS | S/Steel Bezel 140042-A-SS 140042-B-SS 140042-C-SS 140132-AS-SS 140132-BS-SS 140132-CS-SS Galvanised LED Green / Flashing 24V.d.c. LED Green / Flashing 110-120V.ac. LED Green / Flashing 230V.ac. LED Steady Green/Steady Red 24V.d.c. LED Steady Green/Steady Red 110-120V.ac. LED Steady Green/Steady Red 230V.ac. |
| 140044 140144 | E-Stop Mechanism – Standard E-Stop Mechanism – Stainless Steel |
| 140043 | Safety Spring 220mm long |

