Technical Data Sheet

Grabwire Switches

CDPD53
Issue 1

General Description

Grabwire switches are the equipment of choice to provide safety protection over long distances. Prior to the development of Grabwire switches, machinery such as conveyors had to be fitted with a number of separate Emergency Stops.

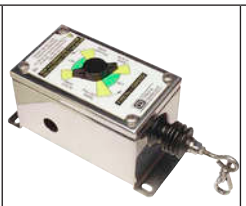
Positioning the 'Stops' such that at least one could be reached from any point, was often difficult to fulfil.

A Grabwire switch assembly gives a continuous and uninterrupted safety provision over long distances. With our Live-Wire system, this can stretch to 2km.

Conveyors are the obvious application for such devices, but with the ability to take the protection wire around bends, and provide safety cover over both horizontal and vertical runs, the system lends itself to many different applications.

The 'GW' range, is a tensioned wire system which is designed to cover small to medium sized runs. (Up to 100m max. between pairs)

Tensioned Wire System (GW Range)

Reference standards:- BS EN ISO 12100-1:2003 Pts. 1 & 2 BS EN 418 BS EN 60947-5-1 BS EN 60529 BS EN 60947-5-5 BS EN 60204-1 PD 5304				
Catalogue Ref.	GWN1	GWN2	GWN2/SS	GWDE
Description	Universal single ended	Universal single ended	Universal single ended	Universal double ended
Max. span between pairs (L) *	50m	100m	100m	2 x 100m
Enclosure material	Die-cast Aluminium (LM24)	Die-cast Aluminium (LM24)	Stainless Steel 1.6 mm Grade 316	Sheet Steel 1.6 mm
Finish	Textured Powder Coat RAL 3020	Textured Powder Coat RAL 3020	Polished	Textured Powder Coat RAL 3020
Ingress Protection	IP65	IP65	IP65	IP65
Rope Tensioner	Included	Included	Included	Included
Earthing	M4 Internal & External	M5 Internal & External	M5 Internal & External	M5 Internal & External
Electrical Contacts	2 N/C (Safety) + 1 N/O	2 N/C(Safety) + 2 N/O	2 N/C (Safety) + 2 N/O	2 x {2 N/C (Safety) + 2 N/O}
Electrical Rating:- Ith / Ui	10A/415V	10A/415V	16A/600V	16A/600V
AC21/22/23A to BS EN 60947-3	-	-	16A at 415V	16A at 415V
AC15 to BS EN 60947-5-1	5A at 415V	5A at 415V	5A at 415V	5A at 415V
Optional Indicator Lamp	✓	✓	-	-
Setting-up indicator	✓	✓	✓	✓
Hand reset knob	✓	✓	✓	✓
Universal (LH or RH) mounting	✓	✓	✓	✓

* Or between switch & anchor box

Ordering Requirements

Universal Grabwire Switch
(See table above)

+

Connection Kit
(See Page 56)

+

Universal Grabwire Switch
(See table above)

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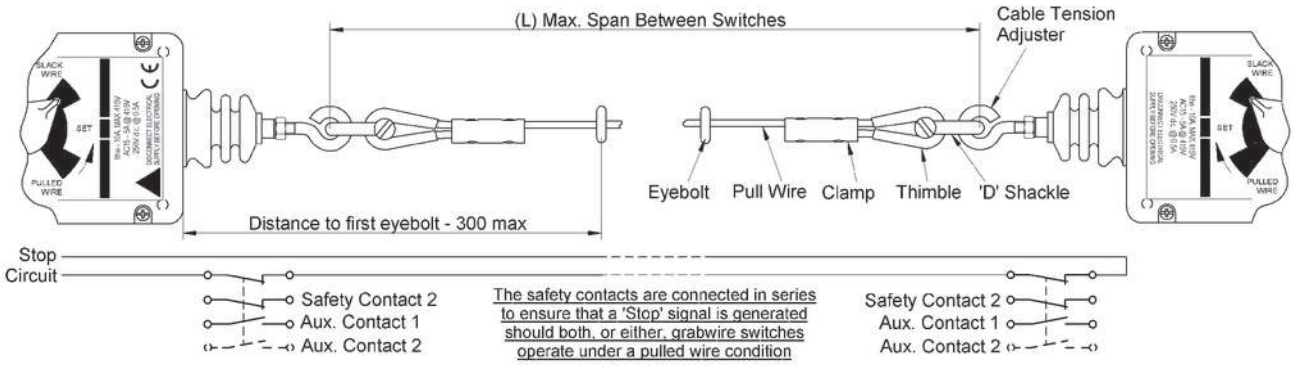
Connection Kits

Apart from the Grabwire switch, the only other item required in a simple set-up, is the connection kit. In the kit you will find all the parts necessary to install the system. Each kit includes:-

- Multi strand steel catenary cable with red PVC covering *
- Stainless steel eyebolt supports. Sufficient to support the cable at 2M intervals. Supplied complete with two fixing nuts.*
- 2 x Stainless steel thimbles.
- 2 x Stainless steel 'D' shackles.
- 2 x Stainless steel clamps.

Description	Catalogue Ref.
Basic connection kit *Catenary wire and eyebolts not included	GK00
5m Connection kit All items for installations up to 5m	GK5
10m Connection kit All items for installations up to 10m	GK10
20m Connection kit All items for installations up to 20m	GK20
50m Connection kit All items for installations up to 50m	GK50
75m Connection kit All items for installations up to 75m	GK75
100m Connection kit All items for installations up to 100m	GK100

Installation Data



It is necessary to place the first eyebolt close to the switching body to ensure that if the wire is pulled at a very oblique angle, then the pull on the switch remains linear.

Recommendations for installation

When planning a grabwire installation, it is vital that the operators safety is always the primary objective.

- Plan the route of the 'pull wire' carefully to ensure the maximum accessibility by the possible users. Ensure that supports can be placed at a maximum of 2m spacing.
- The placement of the grabwire switches need to be in reachable positions for setting-up, monitoring and resetting after an incident.
- Although corners/bends can be incorporated in the run, try to avoid too many. It may be necessary to install additional systems to ensure an effective installation.
- The ultimate objective must be to provide a free running 'pull wire' with the minimum of resistance to movement.
- Measure each run and select a Grabwire switch whose max. span (L) is greater than the measured distance.
- If the total length is over 100m, then multiple installations will be necessary. If the length is excessive, then consider using the 'LW' system.
- Choose the Stainless Steel grabwire switch option if the working environment will be continuously wet or subject to systematic cleansing routines.

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Anchor boxes

Without doubt the most effective installation involves the fitting of Grabwire switches at both ends of the 'pull wire'. However, this does involve electrical cabling up to, and between, the switching units. The use of a non electrical 'Anchor Box' at one end does remove the need to cable between the end assemblies.

The 'Anchor Box' effectively houses a long spring, which is compressed when the 'pull wire' is activated. At a fixed point during the compression, a latch is operated which locks the spring in the compressed or shortened state. When the 'pull wire' is released, it will be in a 'slack' condition, and the switching unit at the other end of the 'pull wire' senses the 'slack' condition and activates the 'Stop' signal. Although the 'Anchor Box' contains no electrical contacts, the latch needs manual resetting to restore the system.

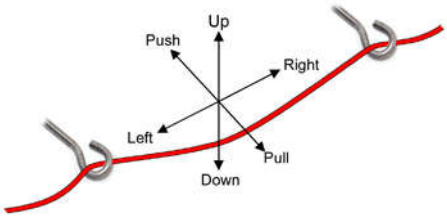


Description	Catalogue Ref.
Non Switching Anchor Box with manual reset	GW/AB

Minimum Installation Requirements

The operator must be able to reach and move the 'pull wire' in any direction. When someone gets into trouble they may only be able to move the 'pull wire' in one direction.

Taking the simple conveyor as an example, the top surface may run left to right, but the underside will be running right to left. Depending upon how and where someone gets caught, they may well be pulled in either direction and only have a hand free to pull the 'grab wire' in one direction only.



Having this requirement means that the use of one grabwire switch and the 'pull wire' terminated at the other end to a fixed point is almost always dangerous.

If an operator gets trapped in the equipment, and the only direction they can pull the 'grab wire' is against the fixed end, nothing will happen.

The minimum requirements in this situation would be a Grabwire Switch at one end and an Anchor Box at the other.

Accessories

To assist with the possible variations necessary when designing an installation, the following accessories are available.

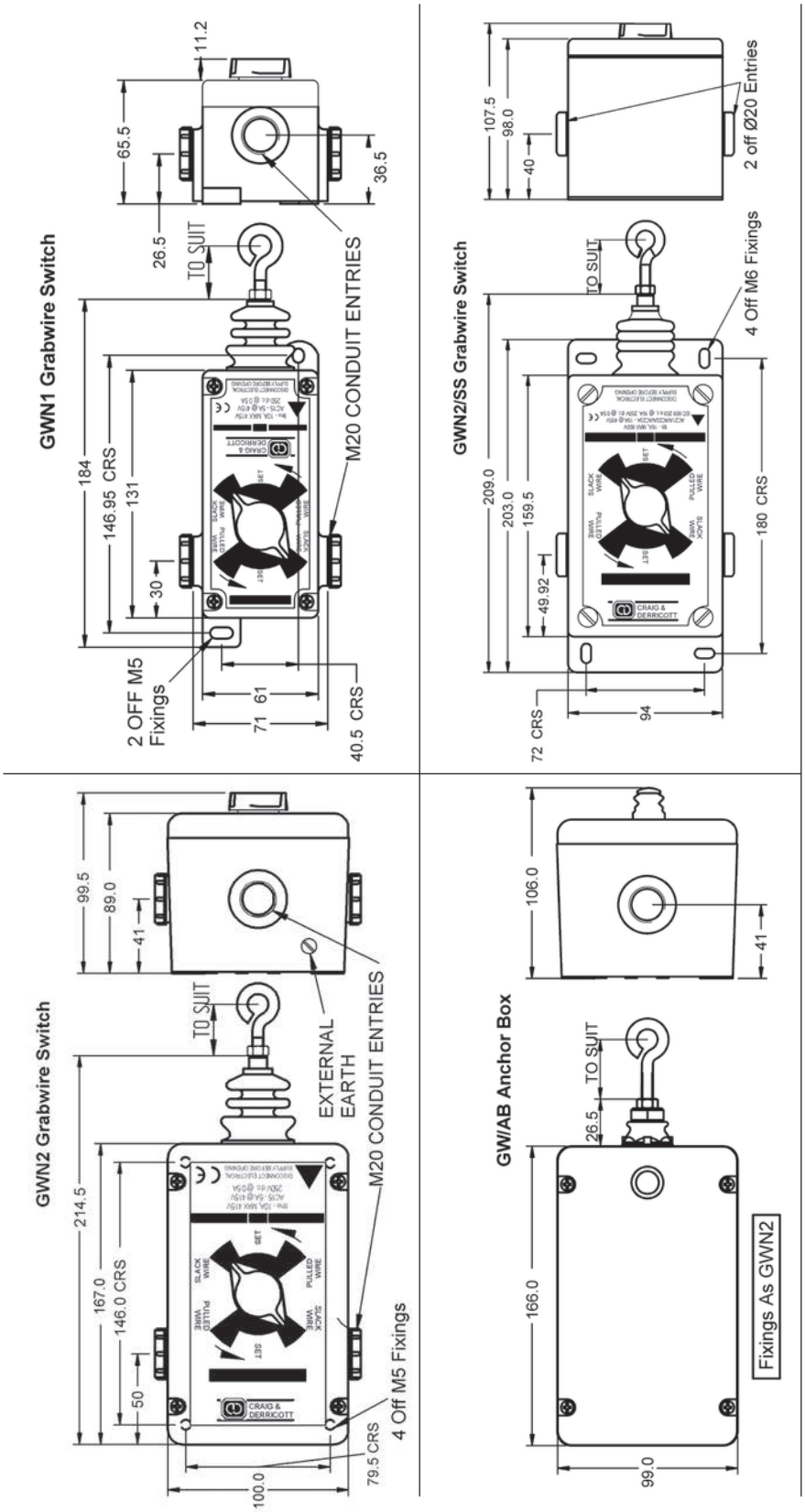
Image/Diagram	Description	Catalogue Ref.
	Indicator lamp, which when powered through one of the spare N/O contacts, will indicate which grabwire switch has been actuated. (Indicates on 'Pulled' or 'Slack Wire' conditions) Supplied complete with bulb. Other colours and supply voltages available to order. 24V (Amber) Annunicator Lamp 110V (Amber) Annunicator Lamp	 GW024A GW110A
-	Stranded steel 'pull wire' with red PVC covering. (Ø5 approx O/D) Sold per Metre. Pull Wire (As supplied in the connecting kits)	MR 0221
	Standard length 'eyebolt' for 'pull wire' support. Supplied complete with 2 x locking nuts. Material - Stainless steel Size - M6 Overall length - 80 Thread length - 58 Standard M6 Eyebolt (As supplied in the connection kits)	GWA 0070
	Extended length 'eyebolt' for 'pull wire' support. Supplied complete with 2 x locking nuts. Material - Stainless steel Size - M6 Overall length - 230 Thread length - 200 Extended M6 Eyebolt	GWC 0270
	Enclosed corner pulley. Chosen to prevent the 'pull wire' getting trapped or detached from the pulley wheel. Material - Stainless steel Fixings - 2 x Ø5 on 26 centres Enclosed Corner Pulley	GWC 0271
	Wrap around 'thimble' to terminate the 'pull wire'. Material - Stainless steel - Termination 'thimble' (As supplied in the connection kits)	GWC 0163
	'D Shackle' to connect the 'pull wire' to the grabwire switches. Material - Stainless steel - Connection 'D Shackle' (As supplied in the connection kits)	GWC 0166
	Cable clamp for securing the 'pull wire' back upon itself once passed around the 'thimble'. Tightening via 2 x Allen screws. Material - Stainless steel - Cable clamp (As supplied in the connection kits)	GWC 0167
-	Allen key for tightening 'Cable Clamp' above. Size - 2.5 A/F. Allen Key (As supplied in the connection kits)	GWC 0189

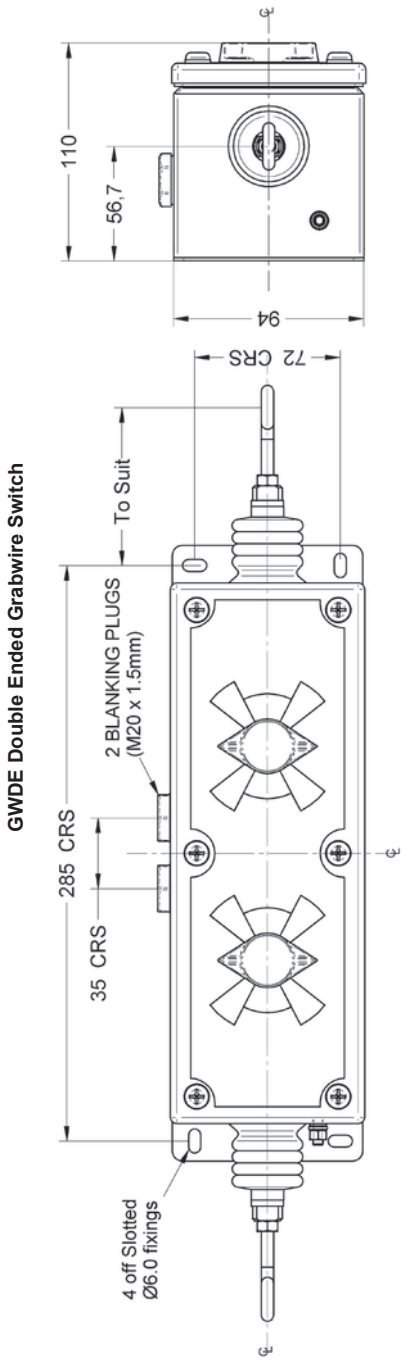
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Dimensions





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