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Dropwiring Components

*Dispenser Dropwire 2B, Pulley Dropwire 4 & 6,
Eyebolts & Brackets*

About this document ...

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Content approval

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Issue 8	07-Dec-2021	Wesley Grantham	Minor amendments.
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1 ***Introduction***

This document details the components used in the safe erection and End-User fitting of all current Cable Drop Wire. It describes the safe operation of the Dispenser Dropwire 2B and also refers to Lifting Operations and Lifting Equipment Regulations (LOLER) which pertain to Dropwire installation equipment. The fitting of Eye bolts and the various dropwire brackets are also covered in this document.

EPT/ANS/A011 Specification for dropwire work - covers working practices for the Provision, Replacement and Recovery of Overhead Wires within the Openreach Network

2 ***Lifting Operations and Lifting Equipment Regulations (LOLER)***

Dropwire installation equipment now needs to meet the new HSE LOLER (Lifting Operations and Lifting Equipment Regulations) requirements. Erection of Dropwire includes lifting and supporting a cable under tension and therefore falls into the LOLER category.

See link: <http://www.hse.gov.uk/lau/lacs/90-4.htm>

In order to meet the regulations the following five pieces of dropwiring equipment need to be labelled appropriately.

Dispenser Dropwire 2B (item code 127548)

Pulley Dropwire 4 (item code 127580)

Pulley Dropwire 6 (047036)

Dispenser Sash line 1 (126356)

Belt Pole 1B (item code 126966).

New Equipment:

This equipment will be marked during the manufacturing stage and therefore does not require additional labelling.

Existing Equipment:

This will require labels to be added to the equipment. Labels for the following items will be available via the Engineering Stores catalogue (eASC).

Labels:

The labels are available in a pack of 6 strips. Each strip will contain 10 labels of one design in a single bag under one item code. The item title is "Dropwire Equipment Labels" Item code 005278

Reminder to all users of Dropwire installation equipment:

Equipment must be inspected before each use to make sure it is in good working order and displays the current LOLER labels.

This equipment will now fall under the Line Managers (LM) yearly Safety checks. All five pieces of dropwire installation equipment will need to be registered on the eYP (esiTest) system by the Line Manager.

Below are examples of labels attached to the equipment. The labelling on new equipment supplied by the manufacturers may appear slightly different from the examples shown below.



Pulley Dropwire 4 and 6 to be fitted on to the non-opening side of the pulley.

To be applied to the outside of the dispenser opposite the handle



Belt Pole 1B applied on to the clam cleat.

3 *Pulley Dropwire 4 and 6 Maintenance*

Pulleys Dropwire 4 and 6 should be inspected before use for any signs of wear or damage. If any indication of damage or excessive wear is found in any of the component parts of the pulley it should be exchanged for a new one.

If any of the moving parts of the pulley are sticking because of contamination by dirt etc. the pulley should be washed in warm soapy water and rinsed off.

The moving parts of the Pulley Dropwire 4 and 6 are constructed from Stainless Steel and self-lubricating plastic materials and therefore must not be lubricated.

4 *Eyebolts and Brackets*

4.1 Fitting to Timber, Brick and Rendered Buildings

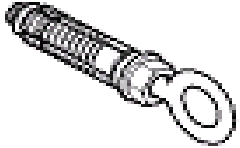
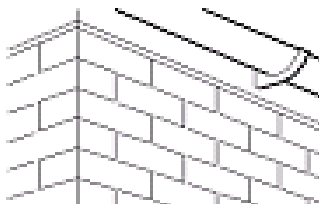
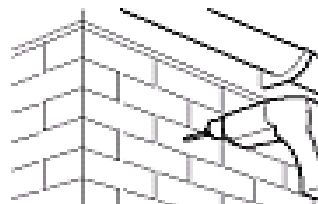

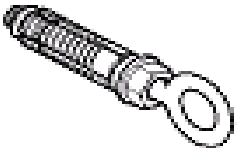

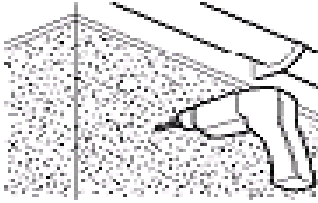

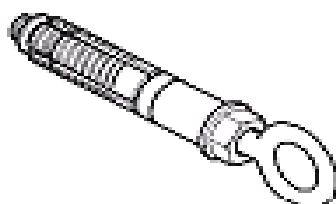
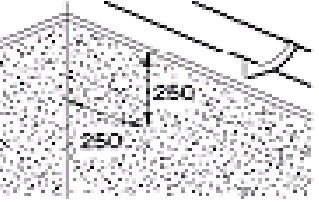
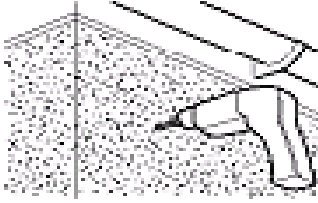

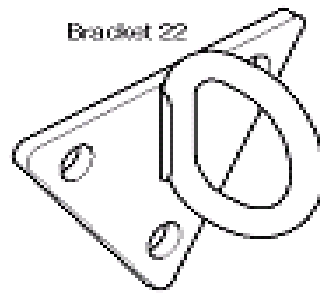
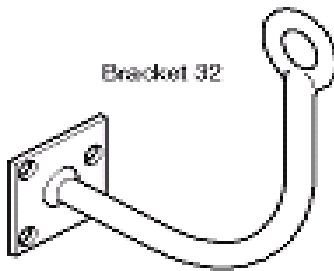
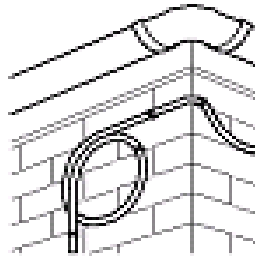
Attachments at Customer premises

Picture 1 shows an Eyebolt Expanding 1A being fitted to brick wall.

Picture 2 shows an Eyebolt Expanding 1A being fitted to a rendered (Harled in Scotland) wall. See ISIS EPT/ANS/A011 section 4.10.1 and EPT/ANS/A013

Picture 3 shows an Eyebolt Expanding 2A in a rendered wall

Picture 4 shows a Bracket 22 and a Bracket 32

<p>Eyebolt Expanding 1A</p> 	<p>EYEBOLT EXPANDING 1A: BRICK ATTACHMENT</p>  <p>Eyebolt to be positioned in centre of selected brick. There must be at least one brick on either side and at least two bricks above/below.</p>  <p>Drill an 8 mm diameter hole 50 mm deep and insert the eyebolt. Finger tighten the nut until the expanding sleeve grips the hole.</p>  <p>Tighten the nut using a spanner. Do not over-tighten as this may damage the brick.</p>
<p>Eyebolt Expanding 1A</p> 	<p>EYEBOLT EXPANDING 1A : RENDERED / HARLED WALL</p>  <p>The Eyebolt should be positioned 250 mm below the roof line, and 250 mm away from wall edge or window.</p>  <p>Drill an 8 mm diameter hole 50 mm deep and insert the eyebolt. Finger tighten the nut until the expanding sleeve grips the hole.</p>  <p>Tighten the nut using a spanner. Do not over-tighten as this may damage the wall.</p>
<p>Eyebolt Expanding 2A</p> 	<p>EYEBOLT EXPANDING 2A: BRICK ATTACHMENT</p>  <p>The Eyebolt should be positioned 250 mm below the roof line, and 250 mm away from wall edge or window.</p>  <p>Drill a 16 mm hole 95 mm deep insert the eyebolt, a light tap with a hammer may be required</p>  <p>Tighten the nut with a spanner until firm and then rotate for another 1/4 turn. Do not over-tighten.</p>
<p>Bracket 22</p> 	<p>BRACKET 22 AND 32: TIMBER ATTACHMENT</p> <p>Bracket 32</p>  <p>Bracket 32 must not be used on spans over 40 m. It should only be used when Bracket 22 does not provide sufficient clearance from guttering, eaves etc.</p>  <p>Screw Size: 10 x 100 mm Slotted No. 4</p> <p>Bracket 22/32 must be attached to substantial timber which is free from decay and solidly fixed to the premises.</p>

4.1.1 Fitting to Brick and Rendered / Harled Buildings

Caution: When fitting an Eyebolt 1A to a rendered/harled wall which has granite or other very hard underlying material, it is suggested that a pilot hole, 5 mm in diameter is drilled first.

Note: The Eyebolt 1A may be used for any direction of pull. The Eyebolt can then be inserted into the hole. If movement of the eyebolt occurs, it is possible that the anchor is crushing the masonry, has hit a void or is in weak mortar. If the eyebolt is not offering resistance then it should be fitted in an alternative position but not closer than 210mm to the original position (i.e. just over a brick length). The unused hole should be filled with silicone sealant.

Caution: WHEN FITTING AN EYEBOLT 2A TO A RENDERED WALL, A PILOT HOLE 8MM IN DIA AND 95 MM DEEP MUST BE DRILLED IN THE WALL BEFORE THE 16MM DIA HOLE IS DRILLED. SEE TEXT BELOW FOR FURTHER INFORMATION

Note: Eyebolts Expanding 1A and 2A may be used for any direction of pull.

Eyebolts Expanding 1A and 2A provide stronger fixing than Brackets 22 and 32 and should be used as the first choice where ever possible.

Note: EYEBOLT EXPANDING 2A - The Eyebolt Expanding 2A is for fixing into pebble dashed/rendered masonry. When using a drill aloft to install an Eyebolt 2A it is mandatory that a Ladder Stability Device Top End (Item code 129363) is used with the working ladder.

Note: EYEBOLT EXPANDING 2B- The Eyebolt Expanding 2B is a special eyebolt for attaching to council properties where they are being renovated and are being clad with insulation, wire mesh and then rendered. See ISIS EPT/ANS/A011 index for more details.

For examples of Eyebolts see pictures below



Eyebolt 2B, 2A & 1A

Note: See Health and Safety Handbook, (Safe Use of Ladders) (Drilling Guide) TMA/MAG/J011 and SFY/HS/A001 (Hand Tools).

Note: Instructions on installing the bolt are supplied with the bolt. If movement of the eyebolt occurs, it is possible that the anchor is crushing the masonry, has hit a void or is in weak mortar. If the eyebolt is not offering resistance then it should be fitted in an alternative position but not closer than 210 mm to the original position (i.e. a brick length).

Note: The Bracket 32 can be used on brickwork or timber (See installation requirements in ISIS EPT/ANS/A011)

4.2 Fitting Bracket 32 to Brickwork

The bracket must be positioned so that all of its fixings have at least one brick on both sides and at least two bricks above and below. Mark the fixing positions using the base of the bracket as a template. Drill 4 x 8 mm holes.

Fit two Stud Expanding 1A (item code 016303) into the wall such that they are diagonally opposite one another and in separate bricks.

In the other two holes place Plug Screw Fixing 2A. (Item code 070883)

Fit the bracket onto the Stud Expanding 1A with the nuts provided then complete the attachment to the wall using Zinc Plated Countersunk Wood

Screws into the Plug Screw Fixing 2A through the two remaining diagonally opposite holes.

For Fitting Bracket 32 to Timber

Use 4 x Screw Steel Zinc Plated Countersunk Pozidrive No. 1 x 12 Item code 211458

4.3 Bracket 44

The Bracket 44 (item code 009561) is secured to a brick or rendered wall using 2 Bolt Expanding 2A (item code 021689). The Bracket 44 will give an additional lift of 244mm over the Bracket 32.

Span length

Bracket32 - 40m

Bracket44 - 68m

To attach the Bracket 44 to a wall, the bolt holes should be placed at least 250mm below the roofline and at least 250mm away from the edge/corner of the wall or window. Using a Bracket 44 template (item code 024247) mark the position of the pilot holes to be drilled through the template, one Bolt per brick where possible. Insert the bolts and tighten the nuts. When the bolts become tight, undo the nuts, remove the washers and place the bracket over the bolts. Replace the washers and nuts and tighten the nuts to secure the bracket.

4.4 Bracket 51

The Bracket 51 has a height of 600mm and a throw out of 350mm and will support a span length of 68m including road crossings.

The Bracket 51 is attached to the wall by the same drilling method as the Bracket 44 but, as this bracket stands out further from the wall and is considerably taller; **fitting from a MEWP (Mobile Elevating Work Platform) should be the first consideration.** If access by MEWP is not possible the only other permissible method is by using the **Ladder-fix Microlite BT** top end stand-off device (**129079**) ensuring that **three points of contact** are maintained with the ladder. The stand-off device may be fitted to either the top or second rung of the ladder depending on the position of the bracket in relation to the building architecture to ensure the top of the bracket is not above head height.

Note: Fixing a Bracket 51 is not to be undertaken in low ambient light conditions

4.5 Fixing to Steel Framed Cladded Buildings other than BISF Houses

There are many different designs of buildings and a number of different types of cladding. Below is a summary of the issues that surround fixing to steel framed cladded buildings. Security of the cladding to the main structure is an unknown quantity (sometimes it is only clipped on to the building) so attaching directly onto cladding is not a viable option.

Access would be required to the steel structure of the building. These are treated with or contained within fire retardant materials. This protection would need to be breached to achieve a fixing.

Drilling into strength members may compromise the structural integrity for which BT may become liable. Clamping systems are available but are designed for internal use and are applied at the time of construction of the building.

Access would be required through the cladding. Currently there are no standard reinstatement methods for cladding and BT/Openreach may become liable for any ingress through the cladding and any problems due to loss in strength of the cladding as a result of our work.

Our own work force is not expert in building construction and may not be able to identify structural components correctly.

Guidance

When planning or providing entry into steel framed clad buildings the preferred entry is by means of an underground feed. If Overhead is the most cost effective means of provision the overhead feed should be taken as close as possible to the building, terminated on a pole and an underground feed taken into the building.

The following problems can arise by attaching to a non-BT/Openreach approved fixing. The fixing may be of insufficient strength or life span to meet the safe working load requirements of the installation.

The Liability for failure of the fixing being attributed to BT/Openreach for example: damage to the structure or the cladding of the building.

4.6 Fixing to Metal Clad Buildings & BISF Houses

For the pop-riveted bracket 22 method of attachment see EPT/ANS/A011 section 4.10.3.2

5 *Copper Dropwire Variants*

5.1 Terms

- Within this Document, the term OBSOLETE refers to Products / Practices which have been withdrawn and which are no longer authorized for use in the Network.
- Within this Document, the term OBSOLESCE refers to Products / Practices which although Outdated / Superseded, are currently still authorized for use in the Network.

5.2 Historic and current Dropwire Types

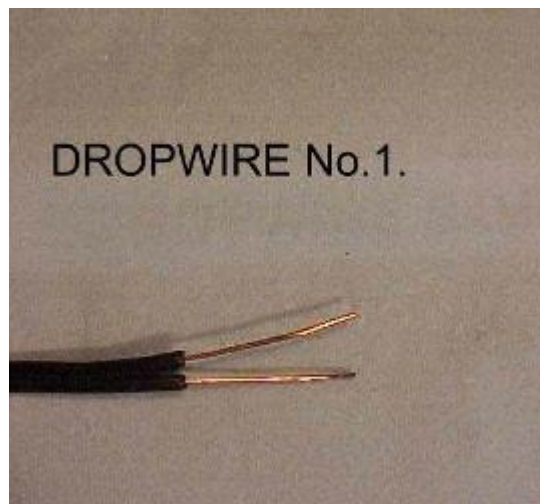
Cable Dropwire Coaxial 3 obsolete

One pair (2 conductors) of 0.47 mm diameter cadmium/copper wires, Polyethylene sheath. Black sheath for voice transmission. Attached Coaxial Pair cable with one inner conductor of 0.47mm copper coated steel wire. Wire is separated by dielectric insulation (Polyethylene) from outer conductor (consists of longitudinal copper tape covered by copper braiding). This cable was used for supplying BT cable television in Coventry, Aberdeen and Swindon from 1985.



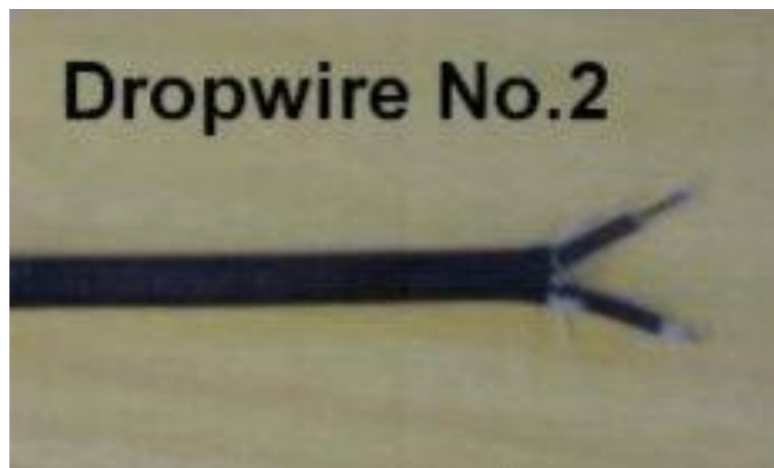
Dropwire 1 (DW 1) obsolete

One pair (2 conductors) of 0.91mm copper cadmium, VR insulated with a Black PVC figure of "8" cross section with copper coloured conductors approximately 6mm across. Developed from Open Wire in early 1960's.



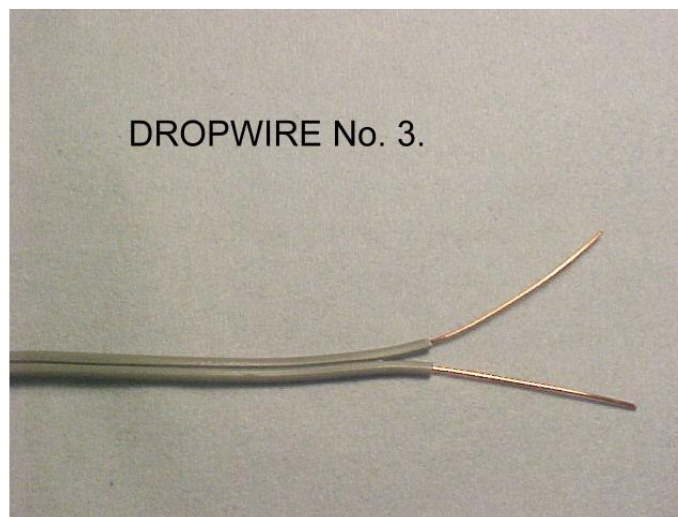
Dropwire 2 (DW2) obsolete

One pair (2 conductors) of 1.1mm copper cadmium, PVC insulated with a Polychloroprene sheath. Black rubber ovoid construction approximately 10mm across with silver conductors. Developed from Open Wire in early 1960's



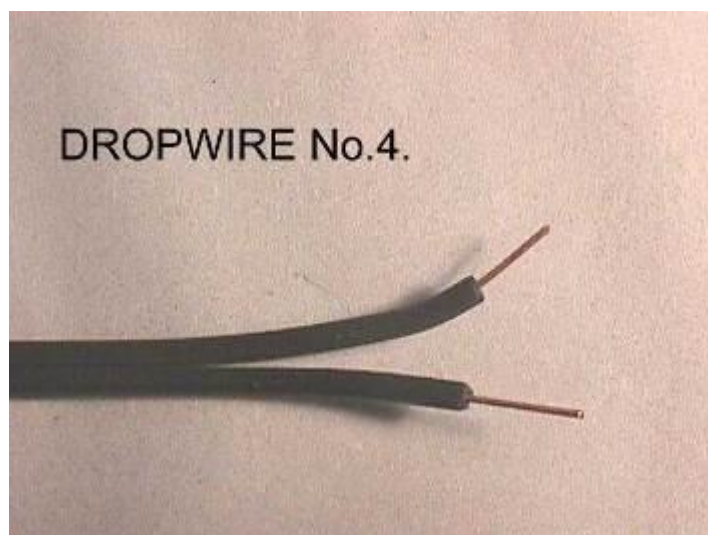
Dropwire 3 (DW3) obsolete

One pair of 0.71 mm diameter copper coated steel wires, PVC insulated, approximately 3 mm wide with a figure of eight construction.



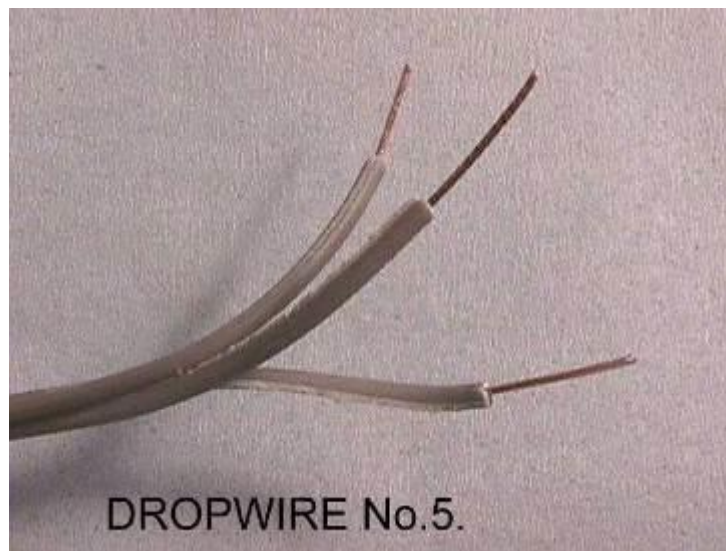
Dropwire 4 (DW4) obsolete

One pair(2 conductors) of 1.14 mm diameter copper coated steel wires, Black PVC figure of "8" construction approximately 12 mm across with copper coloured conductors



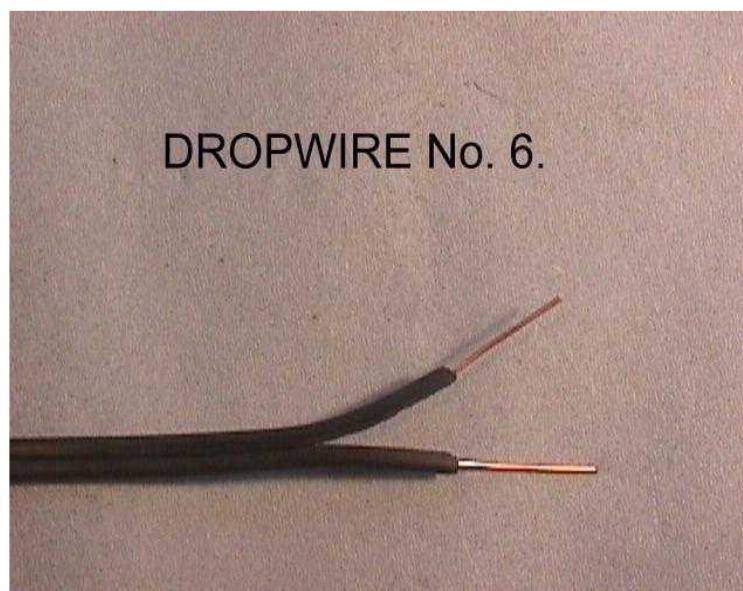
Dropwire 5 (DW5) obsolete

One pair (3 conductors) of 0.71 mm diameter copper coated steel wires, Grey PVC Trefoil construction approximately 8mm across with three copper coloured conductors



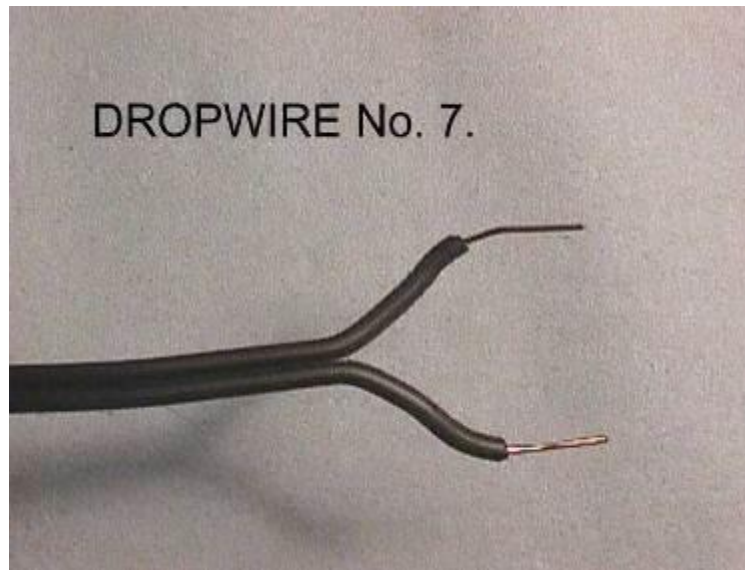
Dropwire 6 (DW6) obsolete

One pair of 0.81 mm diameter copper coated steel wires, PVC insulated, figure of eight construction approximately 5 mm wide, nominal breaking force 1300 N. (Now superseded by Dropwire 10.)



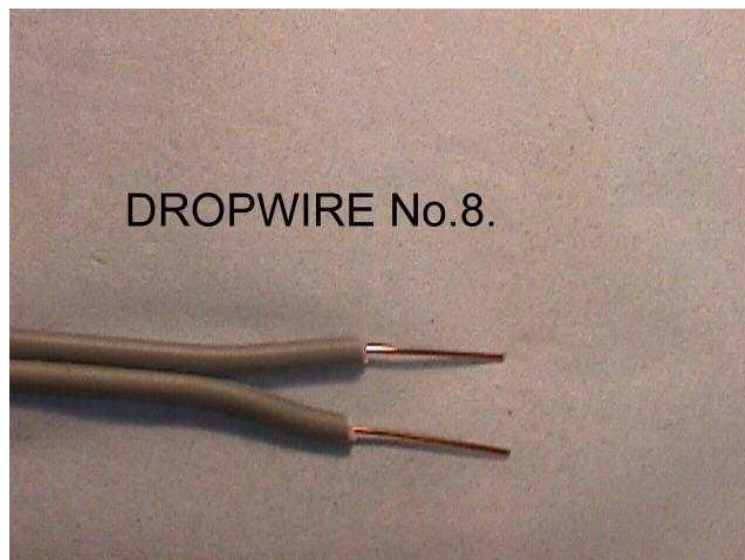
Dropwire 7 (DW7) obsolete

One pair (2 conductors) of 0.80 mm diameter cadmium/copper wires, PVC insulated, figure of eight construction approximately 5 mm wide with a Black sheath



Dropwire 8 (DW8) obsolete

One pair of 1.14 mm diameter cadmium/copper wires, PVC insulated, figure of eight construction, nominal breaking force 1500 N, used for power crossings. (Now superseded by Dropwire 12.)

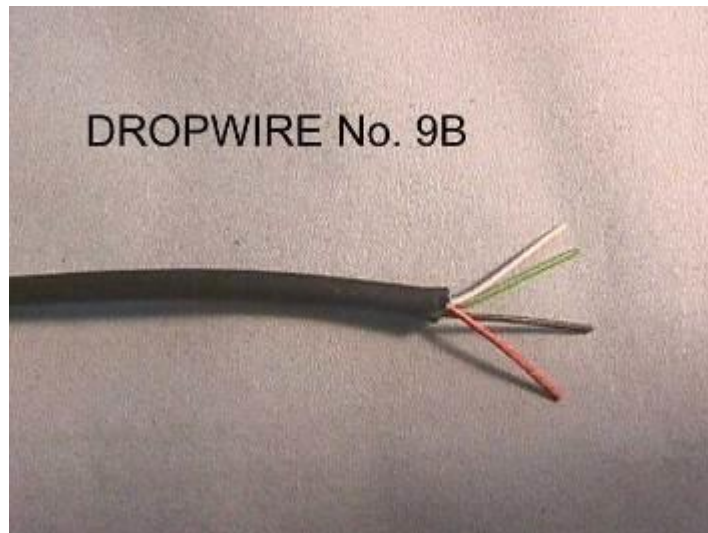


Dropwire 9 (DW 9 and 9B) obsolete

Dropwire 9 - Two pair (4 conductors) of 0.5 mm diameter cadmium/copper wires, PVC insulated, used for joint user power crossings. PE sheath. (Now superseded by Dropwire 12). Black sheath.

Dropwire 9B

Same as Dropwire 9 but with two pair (4 conductors) of 0.0.63 mm diameter cadmium/copper wires

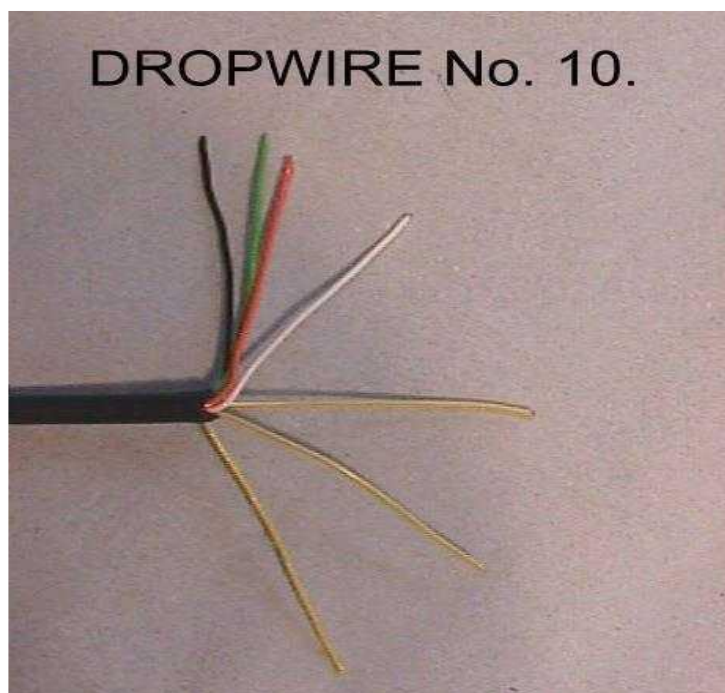


Dropwire 10 (DW10) obsolescent

Two twisted pairs of 0.5 mm diameter copper wires insulated with PVC. Strength was provided by three, PVC sheathed, stranded steel, strength members. The pairs and strength members are over sheathed in medium density polyethylene to make a circular cross-section cable. A ripcord was provided for ease of splitting the sheath. Breaking force 1350N - 1550 N.

Dropwire 10B (DW10B) obsolescent

The cable make up is similar to Dropwire10 except that the conductor insulation is made of Polyethylene and has an additional tape over core. The change of Conductor insulation material from PVC to Polyethylene allows 10B to be used when crossing below HV Power Lines (not exceeding 11kV) High Voltage breakdown performance similar to Dropwire12, thus removing the need to change dropwires when crossing below HV Power crossings (not exceeding 11kV).



Dropwire 11 (CDW11) obsolescent

It has the same diameter and fittings as all standard copper drop wires, e.g. DW 10B and DW15 except it will contain a single pair of 0.5mm copper. The existing dropwire dispenser is also compatible.

The new DW No.11 is for spans up to 68 metres and road crossings. It will replace the DW10B (Item Code 055201) when existing stocks of DW10B are exhausted.

For exceptional situations where more than one pair is required, use the new Dropwire No.15 (replacement for the CAD55M). DW15 now has a maximum span length of 68m and is suitable for road crossings.

Dropwire 11G (CDW11G)

Item Code is 092337. For customer overhead distribution, for all applications including G. fast. Contains 1 PE insulated twisted pair with copper conductors and separate strength member, sheathed with high density polyethylene. Pair lay length 35mm.

Dropwire 12 (CDW12)

Item Code 055704. A single pair dropwire with 0.9 mm copper conductor, separate steel strength members enclosed in a black polyethylene sheath. Commonly used where known transmission problems (requiring a larger conductor size) exist. Designed for use under Power crossings up to 11kV.

Dropwire 15 (CDW15)

Item Code 062778

This replaces Drop Wire CAD55M.

Cable Dropwiring No. 15 has the same diameter and is compatible with the fittings as used on all standard copper dropwiring e.g 10B and the CAD55M.

The 4 pair 0.5mm Cable Drop Wiring No. 15 can be used for spans up to and including 68 Metres, and road crossings.

6 ***Dispenser Dropwire 2B - Description and Operation***

The Dispenser Dropwire 2B provides the following facilities:

Caution: A carrying frame/trolley for the dropwire reel.

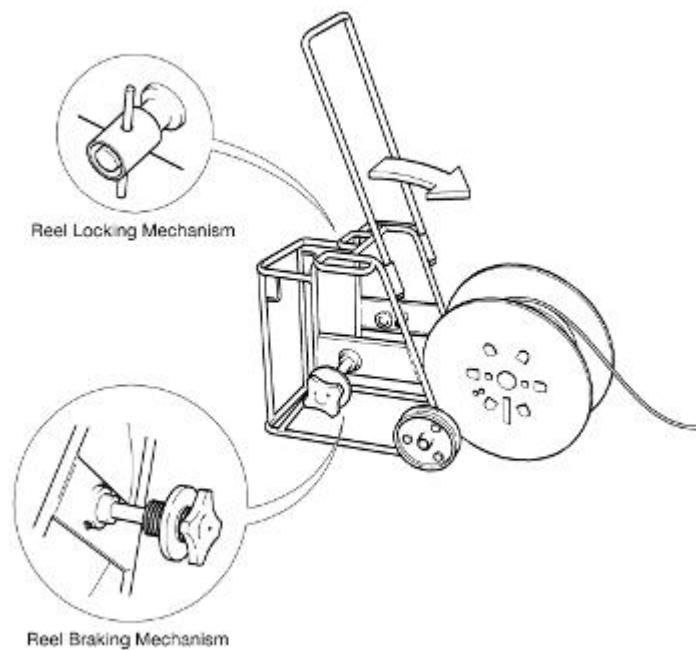
Caution: A braking device to ensure that clearance is maintained over roads and power during installation and

Caution: A locking device to ensure that the dropwire remains in position whilst work is carried out between the time when the dropwire is pulled into position and the clamps are installed.

6.1 **Loading dropwire reel onto the dropwire dispenser**

Place the dropwire reel onto the floor and offer up the dispenser with its wheels pointing towards the reel as show in *Figure 6.1*. The direction of the arrow on the drum braking device must point in the same direction as the rotation of the dropwire reel when the dropwire is pulled off.

Figure 6.1 loading dropwire reel onto dropwire dispenser



Unwind the spindle completely and pull back so that the space in the centre of the frame becomes free see *Figure 6.1*. Ensure that the locking pin is pulled out to the unlocked position.

Place the frame over the reel by pivoting the dispenser on its wheels. See *Figure 6.2*

Pass the spindle through the hole in the centre of the reel and turn the nut on the braking device to secure the spindle in position on the frame.



Figure 6.2 Inserting spindle through the reel

6.1.1 Applying the reel brake

The reel brake is applied or released by turning the spindle using the hand nut on the end of the spindle. Once the correct amount of braking has been applied this must be locked in position using the locking nut. See *Figure 6.3*.



Figure 6.3 locking the braking mechanism

6.1.2 Applying the reel lock

The locking pin is a spring-loaded pin that locates into a hole provided on the side of the reel to fix the reel position. See *figure 6.1*. This prevents the reel from unwinding during transit and during cabling operations when the dropwire is to be left aloft but unterminated for a period of time such as when terminating at the customer's premises after pulling the dropwire into position.

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