iLS Signals (Winch)

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Issue 6
April 2020

UNIPART DORMAN

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Table of Contents

Document Control

It is the reader's responsibility to ensure they have the correct version of this document. If in doubt, please contact Unipart Dorman to verify the current issue status.

Issue Number	Dated	Reason
1	Sep 12	Initial Issue
2	Nov 12	Updated Winch Information
3	Mar 13	Updated Winch Information
4	Oct 13	Updated Module Replacement
5	Feb 19	Updated Signal Sighting Information
6	Apr 20	Updated with additional information on available accessories

Cautions and Warnings in This Document

To highlight items in this document that warrant extra vigilance the following two alert formats are used:

Activities identified as needing extra care are highlighted using the Caution Symbol

ACTIVITIES WHICH ARE OR HAVE THE POTENTIAL TO BE HAZARDOUS TO PERSONNEL AND/OR EQUIPMENT ARE HIGHLIGHTED WITH THE WARNING SYMBOL

Introduction

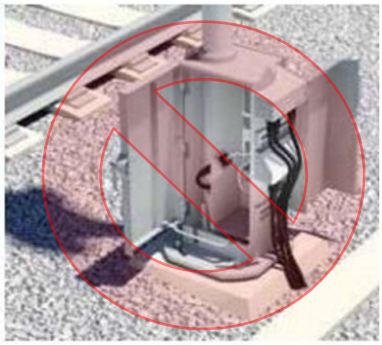
Unipart Dorman Integrated Lightweight Signals (iLS) are a versatile yet simple signalling solution that are quickly and simply installed onto standard foundations with plug coupled electrical connections.

The key to the simplicity of the system is the small number of user defined elements. These are:

- The hinged Trunnion base, which has either one or two lockable electrical connection boxes.

This document is specifically for the conical Standard Trunnion fabricated from aluminium that requires the winch to raise/lower. For Modular Bases and Assisted Lift Trunnions please refer to their type specific O&M Manuals which can be found on the Unipart Dorman website

Standard Trunnion



Modular Base

Assisted Lift Trunnion

- A post and signal head constructed from Glass Reinforced Plastic (GRP) to a height and signal element configuration as requested by the customer to the specification in the Unipart Dorman iLS Head Master Matrix.

- Customer defined LED module configurations which can include a 1, 2, 3 or 4 aspect Colour Light Signal with either Long Range, Medium Range Wide Beam or Medium Range Narrow Beam variants; Position Light Junction Indicators; Position Light Signals and Standard/Miniature Alphanumeric Route Indicators. Standalone SARI, Banner Repeater or Preliminary Route Indicators are also available

In addition to the standard Current Proved versions, low power Voltage Free Contact Proving is available and can be specified where the infrastructure is compatible.

iLS signals are installed onto the Base using simple hand tools, then the signal is raised or lowered using a special to type winch kit which consists of a hand operated winch attached to a winch frame, an under frame and a tie rod.

There is a separate Installation Winch Technical Information Pack which should be read in conjunction with this Manual and gives in depth detail of the winch equipment.

A full range of accessories such as Signal ID Plates and Out of Use Bags are available from Unipart Dorman. Additional Visors, Wedges and Blanking Plates are available as shown in the relevant section of this manual.

Storage

Trunnion Base

The Trunnion is supplied on a pallet and may be stored in the open air. It is recommended for ease of mechanical handling that the Trunnion is retained on the transport pallet. The fasteners used to secure the unit to the pallet should not be used as mounting hardware during installation.

It should be noted that the Trunnion weighs typically 50kg and if it is to be moved by anything other than mechanical means, then the appropriate risk assessment should be undertaken by the user prior to manual handling.

Post / Head

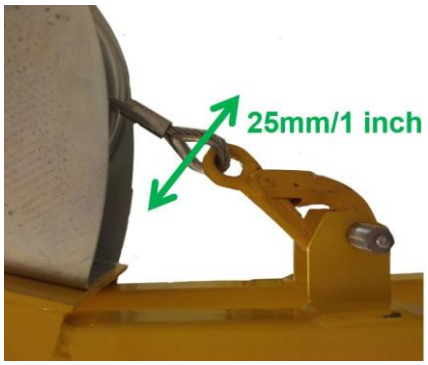
The head/post is supplied complete on a long pallet with protective packaging which should not be removed prior to delivery to site. (All packaging materials should be disposed of in accordance with local regulations).

The signal should be retained on the pallet until ready for installation and when removed should laid down 'face up' so the lenses are not at risk of damage.

Winch

The winch kit is subject to the provisions of the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) and should be stored under cover or indoors wherever possible. It is subject to 6 monthly recertification in accordance with LOLER and the Winch Certificate and any other supplied documentation must be kept dry and readily available for inspection.

To maintain the correct rope lay tension on a stored winch's drum, the hook should be attached to the tie rod attachment pin on the frame as shown with approximately 25mm/1-inch free play in the cable.



(Pin retaining lanyards removed for clarity)

Installation

It is assumed that the foundation for the particular signal has been installed and has been accepted by the person responsible for structures prior to commencement of the installation.

There shall be a minimum exposed thread length of 200mm available on all four M24 mounting studs which shall be set at 380mm centres.

Safety

Following a positive local risk assessment, it may be possible to install and erect the lighter signals in the iLS range in line with good manual handling practices. However, Unipart Dorman strongly recommends that the winch system is always used to minimise the risk of personal injury or physical damage to the signal.

Before commencing the task, any local safety requirements affecting the continued safe working environment of the signalling installation and/or the working railway - either directly or indirectly must be carried out. It is the user's responsibility to ensure all necessary risk assessments, permissions to work and preparatory safety activities are correctly completed, recorded as required and adhered to throughout the installation and subsequent life of the signal.

All activity on the iLS and associated Winch Kit must only be carried out by staff deemed competent and holding the correct qualifications/certificates in their fields by their employer.

As the signal winching method will be rarely practised and considerable time might elapse between staff carrying out the operations described in this document, Unipart Dorman recommends reading this document and the Winch Manual fully to reacquaint themselves with the procedures therein before commencing the task.

The all up weight of both the Trunnion and the signal/post assembly are clearly marked under the head and on the label inside the post and painted on the Trunnion as shown below. Installers should ensure that they have sufficient measures in place to ensure a safe lift.

The winching operation must only be undertaken after first setting a safety exclusion zone which only the winch operator enters. The zone should be overseen by a lookout positioned in a place of safety. An assistant may enter the exclusion zone during the winching operation to help with the setting of Trunnion fasteners etc., but this person must only take instructions from the winch operator and spend the minimum amount of time in the exclusion zone possible.

IF ANY DOUBT EXISTS ON THE SERVICEABILITY OF THE EQUIPMENT, OR THE CORRECT METHOD OF OPERATION OF THE WINCH TO RAISE AND/OR LOWER THE SIGNAL, YOU SHOULD CONTACT YOUR SUPERVISOR AND UNIPART DORMAN IMMEDIATELY

Tooling

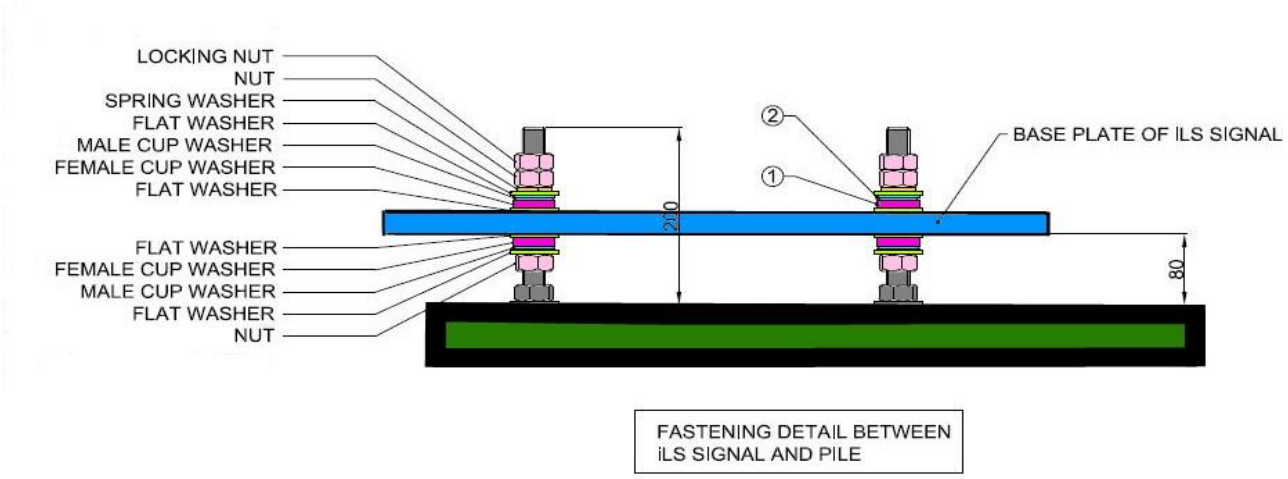
With the exception of the winch and sighting scope the only tools required are simple hand tools such as Torque Wrenches and 36mm Sockets/Spanners and a spirit level.

Pre Installation Checks

BEFORE THE COMMENCEMENT OF ANY ACTIVITY, ARRANGEMENTS SHALL BE APPLIED TO PROTECT THE WORKING RAILWAY.

Prior to mounting the Trunnion, a check shall be made with a spirit level to ensure that the foundation and therefore the top of all four mounting studs are level.

The Trunnion is installed onto four M24 mounting studs which should be clean, free of damage and lubricated, they should also have a minimum of 200mm threaded portion available above the foundation top surface. Mounting nuts and washers shall then be fitted strictly in the sequence shown below; ensuring that the distance between the bottom of the Trunnion base (blue) to the foundation top surface (green) is not less than 80mm.



FASTENING DETAIL BETWEEN ILS SIGNAL AND PILE

The only mounting hardware supplied with the ALT is the cup washer set (items 1&2 on the illustration above). These will be placed in a bag located inside the connection box. All other hardware is to be provided by the customer.

The spherical washer sets are essential for the tilt adjustment and shall not be omitted.

Failing to fit them as described invalidates the Network Rail Product Acceptance

Spare washer sets are available using the order detail below:

ITEM	PART No.	QTY	DESCRIPTION
1	B18.17227	8	M24 SPHERICAL WASHER DIN 6319 TYPE D FEMALE
2	B18.17228	8	M24 WASHER DIN 6319 TYPE C MALE

The 80mm gap between the top of the foundation and the Trunnion base plate is essential to give the necessary clearance for the winch's bottom frame.

The signal and post should be checked for damage and any remaining transit packing materials should be removed and correctly disposed of. The Trunnion bore is to be free of debris and any other obstruction and the Post Clamp should be loosened to enable the post to be inserted.

If the signal is not to be commissioned immediately, the relevant Out of Use mask is to be fitted prior to erection of the post.

The signal shall not be left in a horizontal position awaiting commissioning using the winch. If the signal is to remain lowered and the winch removed, it shall be securely supported

Torque Loadings

	Nm	Lbf/Ft
M24 Adjusting Nuts	**195**	**143**
M24 Trunnion moving plate Nuts	**195**	**143**
T/Box Padlock Lever	****Hand tight Only****	**-**

Scope Fitment Screws	****Finger tight Only****	**-**
Trunnion Collar	**24**	**17.7**

Installation Method

Winch Kit Pre Use Checks

Prior to leaving the depot it is strongly recommended that the following checks are carried out on the Winch Kit:

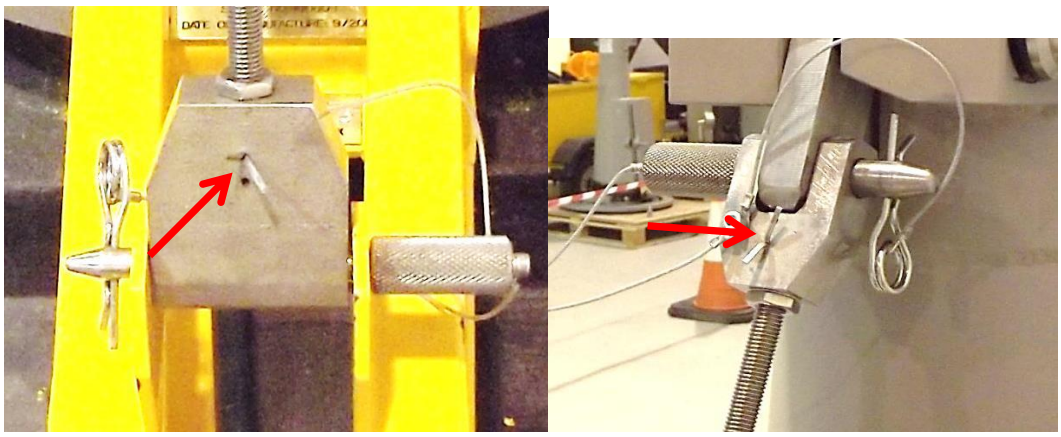
- The Winch Test Certificate is valid*
- There is no sign of damage to any of the equipment.
- The winch and frame assembly should be free from corrosion. Particular attention should be paid to the winch internal parts during this check.
- The winch rope is in good condition and shows no signs of kinks, fraying, wear, splaying or flattening. It should be free from dirt/corrosion.
- A copy of these instructions is readily available and anyone required to operate the winch is to be fully conversant with them and deemed sufficiently competent and where necessary properly certified, to undertake the task.
- The Winch Kit is complete and the two locking pins and R Clips are securely fastened to the frames with the lanyards intact.
- The handle is securely fixed to the winch and the grasp section is free to rotate.
- The snap clip on the hook is functioning correctly
- The Tie Rod ends are 'in safety' determined by the visual check of the split pins in the Tie Rod Safety section
- The white marker paint used as witness marks to indicate the nut/bolt has not become loosened is intact on all fasteners

*** The Winch shall be subjected to testing every six months for certification in accordance with the requirements of LOLER.**

Tie Rod End Safety

Do not attempt to adjust the length of the tie rod. A check that the end fittings are 'In Safety' as defined in this section shall be carried out prior to using the winch kit.

The end fittings on the winch tie rod shall have a minimum of 30mm of tie rod inserted. To ensure this a split pin is fitted in each end fitting as indicated by the red arrows and the tie rod is only deemed to be 'in safety' if these split pins are securely fitted.



Split pin ends not splayed correctly in these images to aid illustration

Handle Force

The following force values are only applicable when the winch handle is in its normal operating position not stowed.

The forces needed to operate the winch are:

Raising a signal – 33.5 Nm +/- 5%

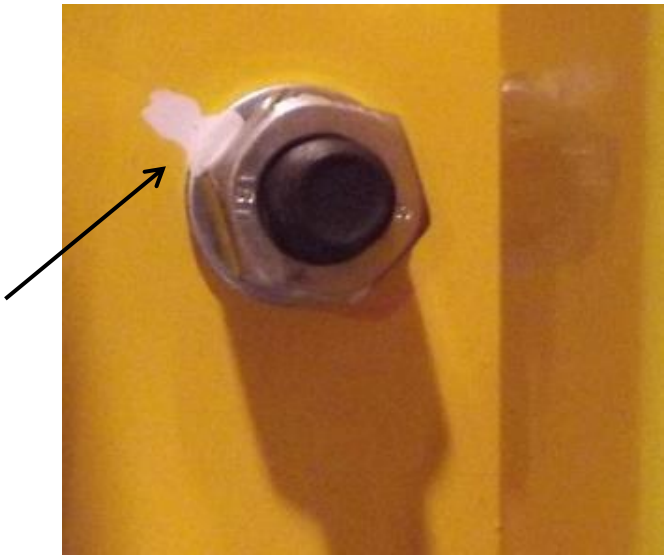
Lowering a signal – 25 Nm +/- 5%

If the handle force is outside these values or if the operator considers the handle forces to be incorrect, winching should be terminated and an investigation into the cause carried out.

Winch handle shown in stowed position (to stow/unstow. pull the grasp section of the handle towards the operator and fold as required)

Nut and Bolt Witness Marks

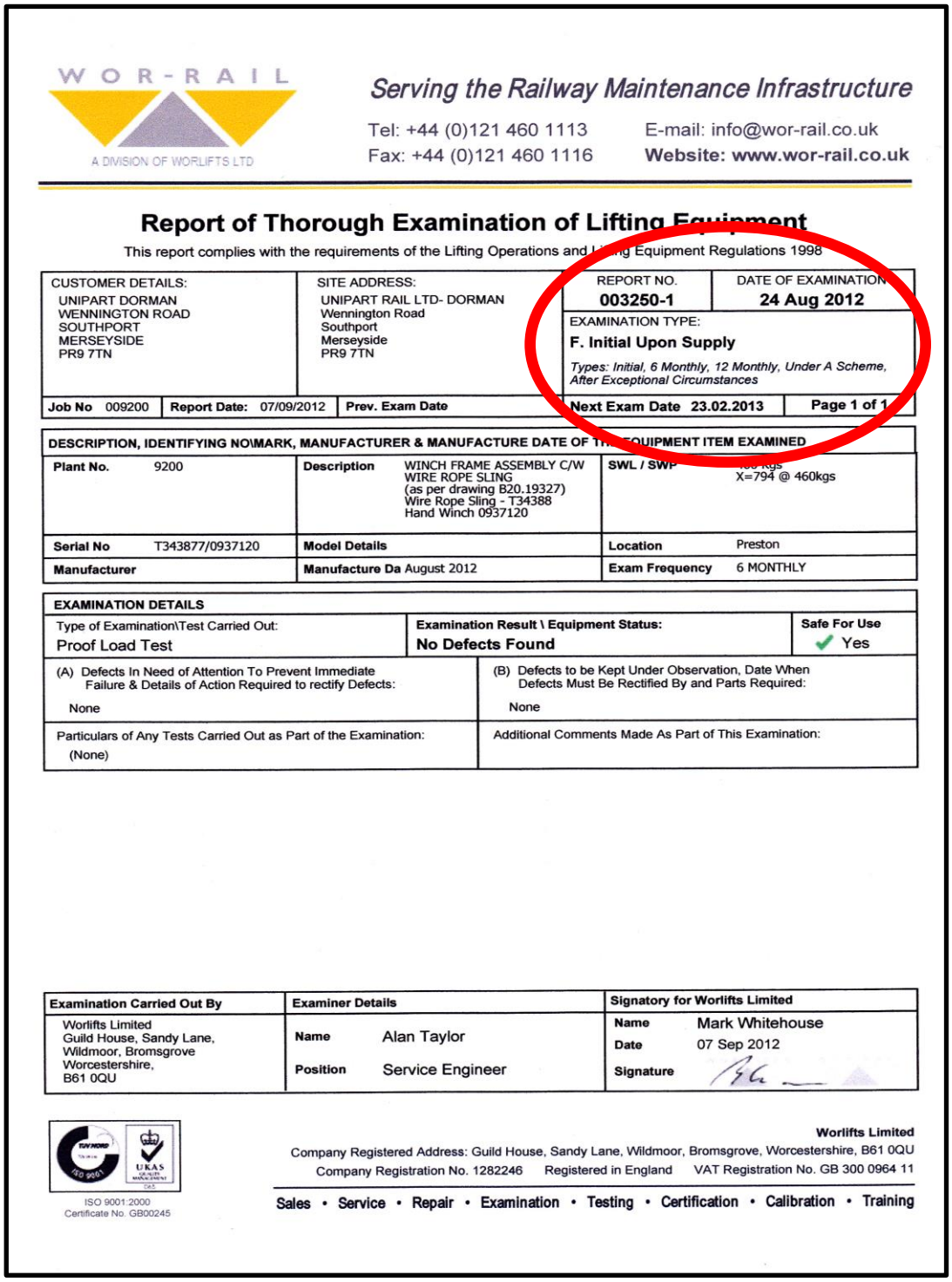
All nuts and bolts on the winch kit leave the factory with marker paint applied acting as witness marks as shown in the example below. If the paint is not intact an investigation should be carried out. If the fasteners are found to be loose, the winch should be quarantined and returned to Unipart Dorman.



Winch Certification

This example of a Winch Test Certificate is shown with the date of its last test and next examination date highlighted. If the winch is out of date, the winch shall not be used and is to be returned to an authorised test facility for recertification.

An example of a winch certificate is shown below.



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Report of Thorough Examination of Lifting Equipment

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998

CUSTOMER DETAILS:	SITE ADDRESS:	REPORT NO.	DATE OF EXAMINATION
UNIPART DORMAN WENNINGTON ROAD SOUTHPORT MERSEYSIDE PR9 7TN	UNIPART RAIL LTD- DORMAN Wennington Road Southport Merseyside PR9 7TN	**003250-1**	**24 Aug 2012**
		EXAMINATION TYPE: **F. Initial Upon Supply** *Types: Initial, 6 Monthly, 12 Monthly, Under A Scheme, After Exceptional Circumstances*	

Job No 009200	Report Date: 07/09/2012	Prev. Exam Date	Next Exam Date 23.02.2013	Page 1 of 1

DESCRIPTION, IDENTIFYING NO\MARK, MANUFACTURER & MANUFACTURE DATE OF THE EQUIPMENT ITEM EXAMINED

Plant No.	9200	**Description**	WINCH FRAME ASSEMBLY C/W WIRE ROPE SLING (as per drawing B20.19327) Wire Rope Sling - T34388 Hand Winch 0937120	**SWL / SWP**	X=794 @ 460kgs
Serial No	T343877/0937120	**Model Details**		**Location**	Preston
Manufacturer		**Manufacture Da**	August 2012	**Exam Frequency**	6 MONTHLY

EXAMINATION DETAILS

Type of Examination\Test Carried Out:	**Examination Result \ Equipment Status:**	**Safe For Use**
Proof Load Test	**No Defects Found**	✔ Yes

(A) Defects In Need of Attention To Prevent Immediate Failure & Details of Action Required to rectify Defects:	(B) Defects to be Kept Under Observation, Date When Defects Must Be Rectified By and Parts Required:
None	None
Particulars of Any Tests Carried Out as Part of the Examination: (None)	Additional Comments Made As Part of This Examination:

Examination Carried Out By	**Examiner Details**	**Signatory for Worlifts Limited**
Worlifts Limited Guild House, Sandy Lane, Wildmoor, Bromsgrove Worcestershire, B61 0QU	**Name** Alan Taylor **Position** Service Engineer	**Name** Mark Whitehouse **Date** 07 Sep 2012 **Signature**

ISO 9001:2000
Certificate No. GB00245

Worlifts Limited
Company Registered Address: Guild House, Sandy Lane, Wildmoor, Bromsgrove, Worcestershire, B61 0QU
Company Registration No. 1282246 Registered in England VAT Registration No. GB 300 0964 11

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List of Signals within the Winch Capability

The only signals that are authorised for lifting by the winch are listed on the iLS Signal Master Matrix available from Unipart Dorman. This matrix covers signal head types and dimensions only and the final check is carried out by using a dedicated in-house stress calculator which uses data extracted from the Signal Sighting Form and

the Foundation Height. It automatically generates loading values which it checks against the winch capability and also signal deflection limits. If these parameters are met the calculator produces a drawing used for the Form A/B or F001, F002, F003 submission and this is sent to the Project/Signal Designer for sign off.

To further prevent the risk of a signal being delivered which would be too heavy for the winch, Unipart Dorman uses 2 additional signatories who also need to sign off this drawing as within deflection parameters and weight limits before the order is placed on the GRP Post/Head Fabricator.

This mitigation measure is subject to regular internal and external audit processes.

Lowering a Signal for Maintenance

The following instructions are written with initial installation in mind but the same procedure for fitting the Winch and lowering/raising the Signal apply.

There is sufficient slack in the cable stowed in the bore of the signal post to eliminate any requirement to disconnect the plug coupler(s) when lowering the signal.

Unless the baseplate or foundation has been disturbed, there is no requirement for sighting/realigning the signal as the hinge and tube are set permanently in relation to the baseplate.

When lowering a signal for maintenance it is vital that no additional loading is added to the weight of the signal, and that it is supported - with all tension taken off the winch rope - as soon as practicable

NEVER WORK ON A TRUNNION OR SIGNAL WHICH IS ONLY SUPPORTED BY THE WINCH.

Installation of the Winch Kit

Winching Safety

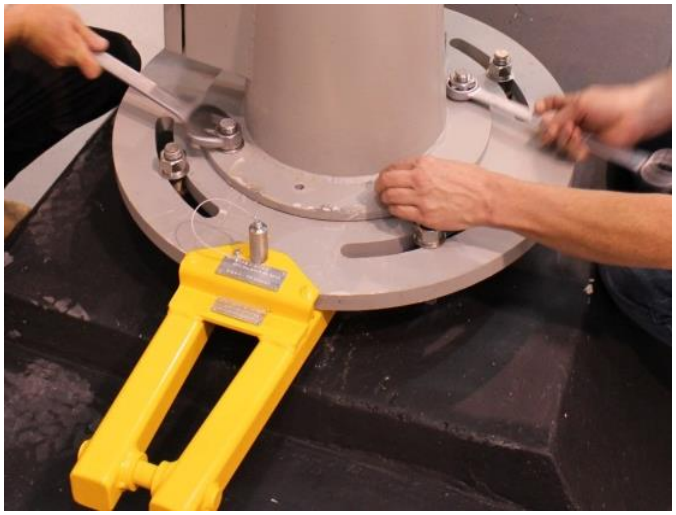
These Instructions should be consulted before using the winch

IF ANY DOUBT EXISTS ON THE SERVICEABILITY OR OPERATION OF THE WINCH YOU SHOULD CONTACT YOUR SUPERVISOR AND UNIPART DORMAN IMMEDIATELY

The lockpins are designed to be a loose fit to prevent binding. They do not have any load bearing requirement and are there only to position the top and bottom frames correctly.

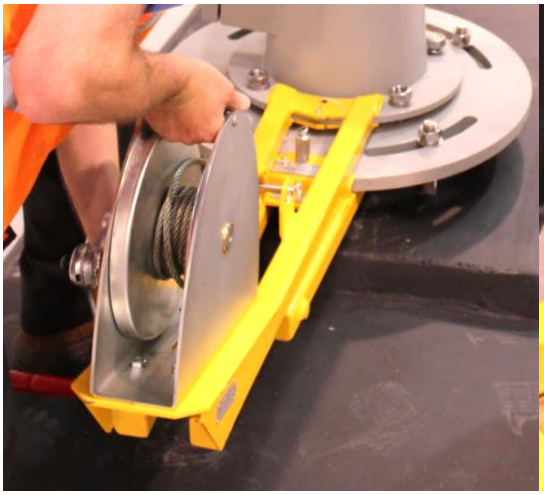
Slide the underframe unit between the bottom of the Trunnion Mount and the top of the foundation base and secure it in place using the lockpin.

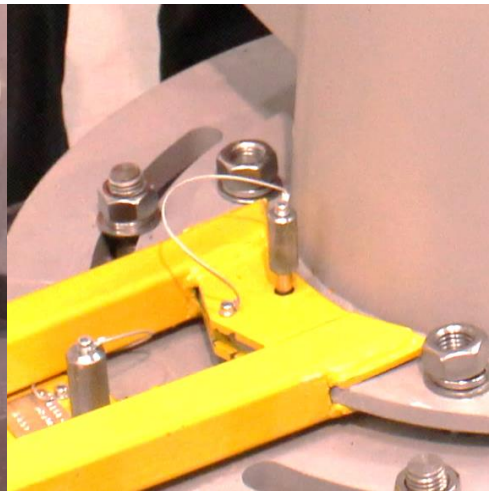
Slacken the four Trunnion tube assembly nuts in preparation for fitting the winch frame.



DO NOT REMOVE THE NUTS COMPLETELY YET

This will allow the Trunnion to be rocked back sufficiently to fit the winch frame assembly which should also be secured with the lockpin provided.



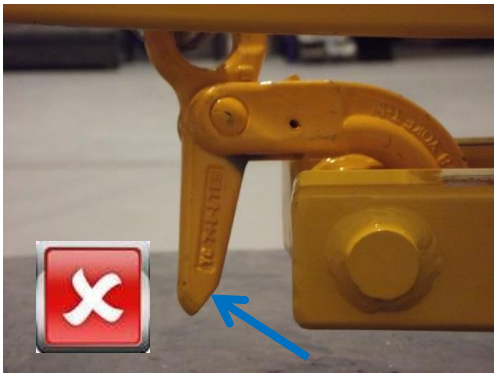


Warning

ROCKING THE TRUNNION BACK TO FIT THE WINCH FRAME EXPOSES A SIGNIFICANT TRAPPING HAZARD.

NEVER ALLOW FINGERS/HANDS OR TOOLS ETC. TO BE INTRODUCED BETWEEN THE TWO PLATES

Connect the winching cable to the underframe unit, ensuring the snap link on the hook (shown arrowed in blue below) is firmly engaged to prevent the hook becoming detached. The hook should only be fitted such that the snap link portion faces way from the signal attachment end of the frame.



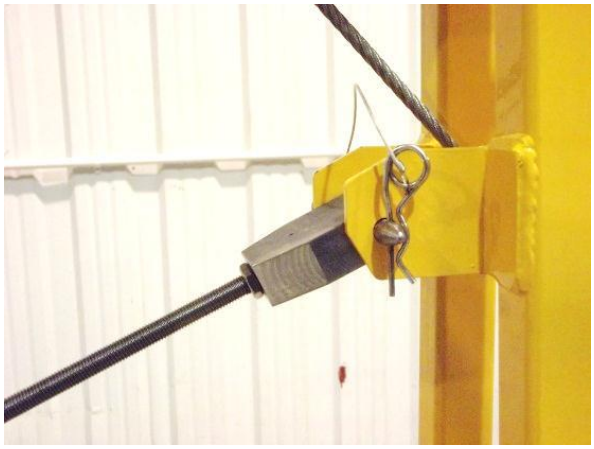
Warning

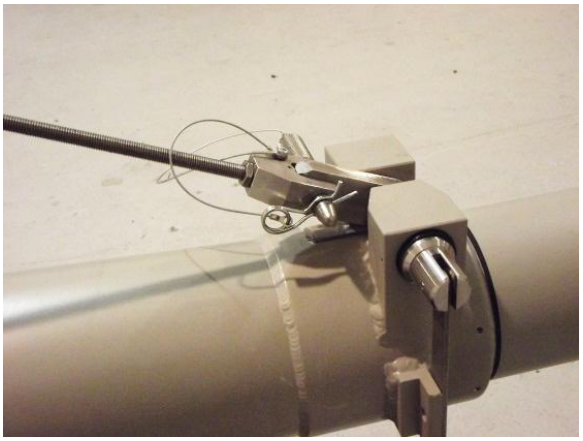
THE TIE ROD MUST BE INSERTED INTO THE END FITTING BY NOT LESS THAN 30MM

PRIOR TO USING THE TIE ROD ASSEMBLY CHECK THAT THE ROD IS INSERTED THE REQUISITE AMOUNT BY CHECKING THE SPLIT PINS MENTIONED IN THE PRE-USE CHECKS ARE CORRECTLY FITTED

DO NOT ATTEMPT TO ADJUST THE TIE ROD LENGTH BY ALTERING THE POSITION OF THE END FITTINGS

Connect both ends of the tie rod and secure the clevis pins with the R Clips as shown.



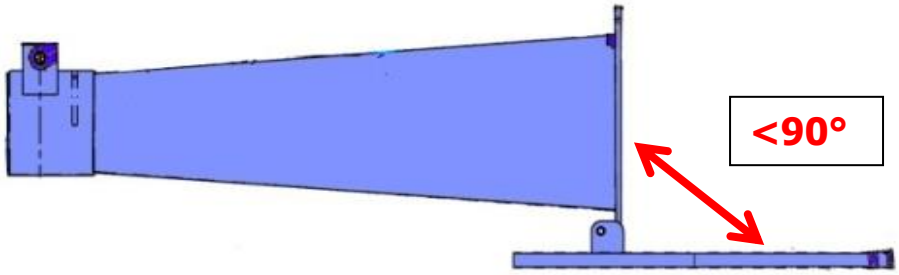


ONCE THE WINCHING OPERATION IS IN PROGRESS THE ONLY PERSON WHO SHOULD ENTER AN EXCLUSION ZONE DEFINED BY THE SWEPT AREA OF A LOWERED SIGNAL IS THE WINCH OPERATOR.

HOWEVER, THE WINCH OPERATOR CAN CALL UPON AN ASSISTANT TO FIT NUTS ETC. THE ASSISTANT SHALL REMAIN UNDER THE SOLE AUTHORITY OF THE WINCH OPERATOR AND IS TO BE INSIDE THE EXCLUSION ZONE FOR THE SHORTEST PRACTICABLE TIME.

DURING ITS OPERATION, THE SAFETY ZONE SHOULD BE OVERSEEN BY LOOKOUTS POSITIONED IN A PLACE OF SAFETY

The Trunnion/Trunnion and Signal should be lowered to the horizontal position which is defined as **not greater** than 90° between the bottom of the moveable portion of the Trunnion and the fixed baseplate.



CAUTION SHOULD BE EXERCISED ESPECIALLY WHERE THE FOUNDATION IS ELEVATED THAT THE TRUNNION AND SIGNAL ARE NOT LOWERED PAST THE HORIZONTAL AS THIS MAY CAUSE DAMAGE TO THE TUBE IF IT COMES INTO CONTACT WITH THE BASEPLATE.

Once the Trunnion is in the horizontal position the head and post should be fitted without delay

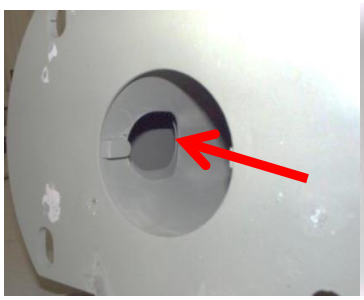
Inserting the Post and Erecting the Signal

There is no provision for using lifting equipment to install the post onto the foundation with it in the vertical position. Any attempts to lift the signal post into a vertical Trunnion, or to lift a pre-assembled post and Trunnion onto a foundation may result in undetectable damage to the post/signal assembly.

The bore of the Trunnion and the signal post should be checked for damage paying particular attention to the keyways on the post and the keys at the bottom of the Trunnion. Check the Plug Coupler(s) and cable(s) for damage then push back up the bore of the post.

Orientate the post correctly and slide it into the Trunnion until approximately 300mm travel remains before the keyways are engaged at the Trunnion base.

This will allow the cable to be routed out of the keyway slot and out through the hole in the Trunnion which passes into the connection box.



Approximately 750mm of cable should be drawn through the keyway into the connection box. The lugs and keyways are then carefully aligned and the post pushed fully home.

Where required due to laydown or access issues, the head and post can be fitted 180° degrees from the normal position in order to fold forward.

Check that the post cannot rotate in the Trunnion bore and that the painted witness mark indicated below on the post is level with the top of the Trunnion.

The assembled signal and Trunnion can then be winched upright.

As soon as the Trunnion has been winched sufficiently over the base plate studs, fit a nut plus 1 x flat and 1x spring washer with at least one thread visible protruding, winching should be stopped and the winch kit removed.

Do not delay fitting all four nuts to the base studs

Removing the winch kit is a reversal of the fitting procedure.

Warning

ROCKING THE TRUNNION BACK TO REMOVE THE WINCH FRAME EXPOSES A SIGNIFICANT TRAPPING HAZARD. NEVER ALLOW FINGERS/HANDS OR TOOLS ETC. TO BE INTRODUCED BETWEEN THE TWO PLATES

All mounting hardware should then be torque loaded to the values shown in the torque loading section.

Unipart Dorman recommends the use of second nuts to lock the securing nuts on both the Trunnion mounting and movable section securing studs. (Photographs of the installation in this document may not show them fitted for clarity purposes)

Finally, tighten the Trunnion collar by hand until tight (approximately 24Nm) and secure with a padlock.

Winch Failure Mitigation

There are only two catastrophic winch failure modes: one where the winch fails and the load subsequently free falls; and one where the winch fails and ceases to operate in either lifting or lowering mode.

In the first case, the establishment of an exclusion zone when the winch is in operation will prevent injury as described in Section 3.1. If the winch jams, do not try to force the handle as this may lead to the first type of failure. Depending on the size and weight of the signal being lifted, the Person in Charge should organise an alternative lifting method to take the weight off the cable sufficiently to replace the winch and carry on with the lift.

If a winch fails in either manner it should be quarantined and contact made with Unipart Dorman as soon as possible.

If the signal impacts the ground or any structure as it falls, it should not be installed as there may be unseen damage to the GRP construction which may not be apparent.

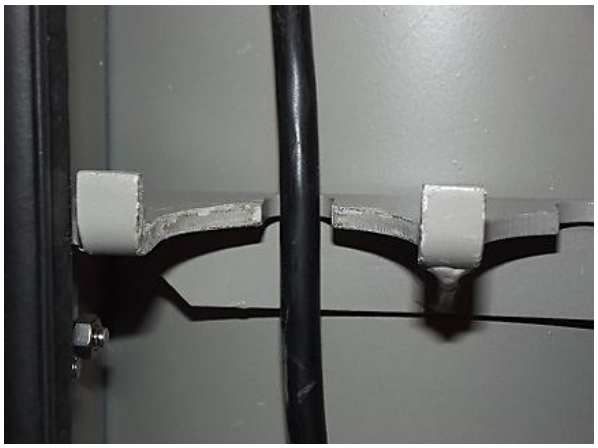
Electrical Connection

Align the keyway and lug inside the connector shells and turn the locking collar by hand until an audible 'click' is detected and the two indicator spots are aligned. (The spots may be of different colours; this is simply the preference of the manufacturer and does not affect the plug coupler's physical attributes)

The Plug Couplers should connect easily and the use of handtools is discouraged. If the coupler cannot be fully engaged by hand, there may be a fault or mismatch in connection detail. This should be investigated as any attempt to force the connection may result in bent or broken pins/sockets which may require complete replacement of either the infrastructure cable or the signal module and cable.

Once the connection is made the Plug Couplers should be stowed in the connection box as shown with the signal cable fitting into the recess in the mounting plate so it

runs up and over the Plug Couplers whilst maintaining a smooth bend radius in the cable. Spare signal cable can be tucked back into the post for stowage.



Close the connection box door ensuring the cable is central in the cut out and the door seal is not damaged or pinched by the door. Secure the door with a padlock.

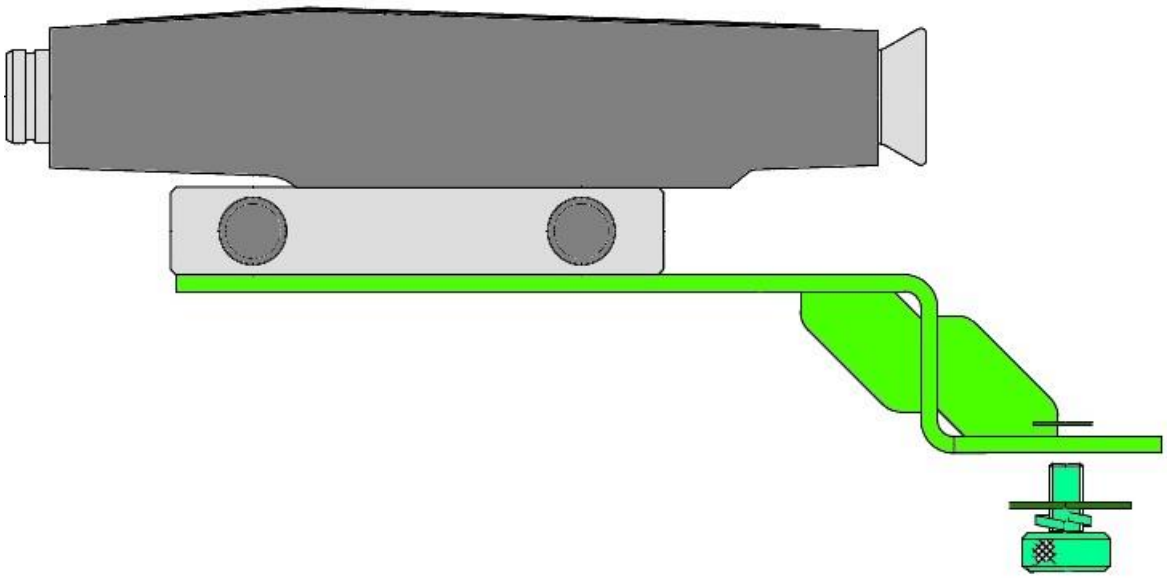
The Trunnion should be bonded to earth if required by the use of bonding straps. No specific earth bonding arrangements to the signalling elements are required by virtue of their double insulated design.

Signal Sighting and Alignment

Detachable Alignment Scope

The Unipart Dorman Detachable Alignment Scope is an optical device that allows accurate signal alignment and is common to both variants of the CLS LITE. It is stored in a bespoke carrying box and should be returned to Unipart Dorman annually for an alignment verification check.

There is an adaptor bracket available that enable a suitable camera to be fitted to the scope. The camera and mount are subject to their own separate instruction sheets available on the Unipart Dorman website.



If the Scope lenses require any cleaning to be carried out, the only mediums approved are water and proprietary detergents.

Do not use any solvent based or abrasive cleaning material, as this may irreparably damage the lenses.

Ensure there is no grit etc. on the lens and then using a lint free cloth moistened with the water detergent solution, carefully wipe the lens clean before using a dry second cloth to remove any water spotting etc. and give a final buffing.

When the scope is moved from a cold to hot environment or vice versa there may occasionally be some temporary fogging of the internal lenses which will clear when the temperatures inside and outside the scope equalise.

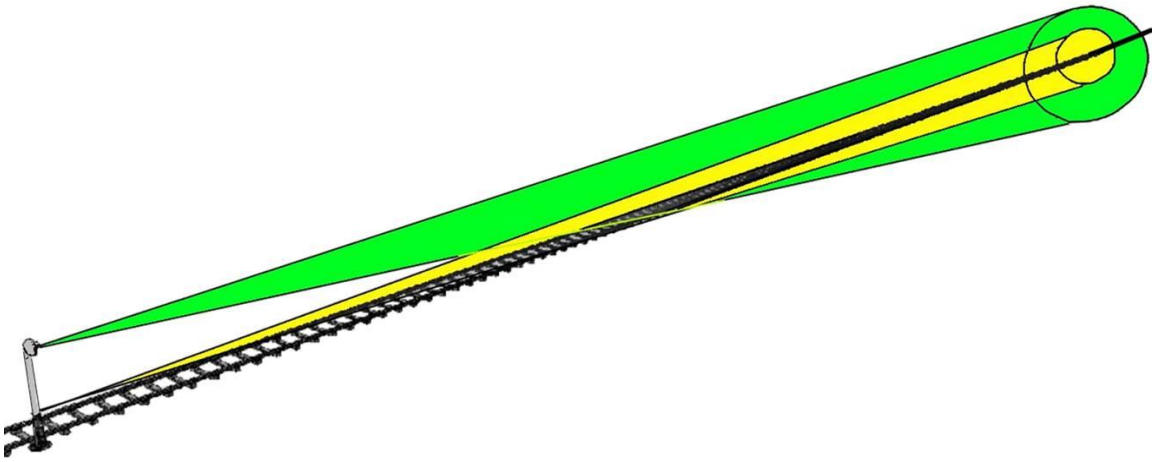
Do not attempt to disassemble the scope to gain access to the internal lenses as this will disturb the optical alignment and the scope will need to be returned to Unipart Dorman for adjustment on the special to type jig

GREAT CARE SHOULD BE TAKEN TO ALIGN THE SIGNAL IN STRICT ADHERENCE TO THE SIGNAL SIGHTING FORM REQUIREMENTS

The Signal Sighting Form (SSF) will provide the definitive, signal specific Alignment details and should always be consulted prior to commencement of work

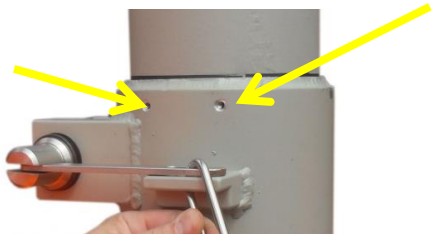
The iLS signals should not be aligned to a tall target board. The beam profile allows the alignment activity to be done at the trunnion as described below and to ensure accuracy, the signal shall be aligned to a point on the ground determined by the signal sighting form.

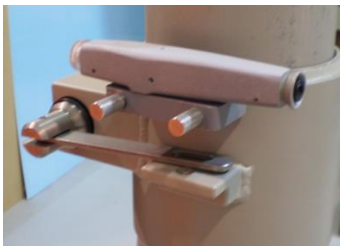
The illustration below shows a representation of the light beam shown in green and the Alignment scope field of view in yellow, converging at a point on the ground determined by the Signal Sighting Form



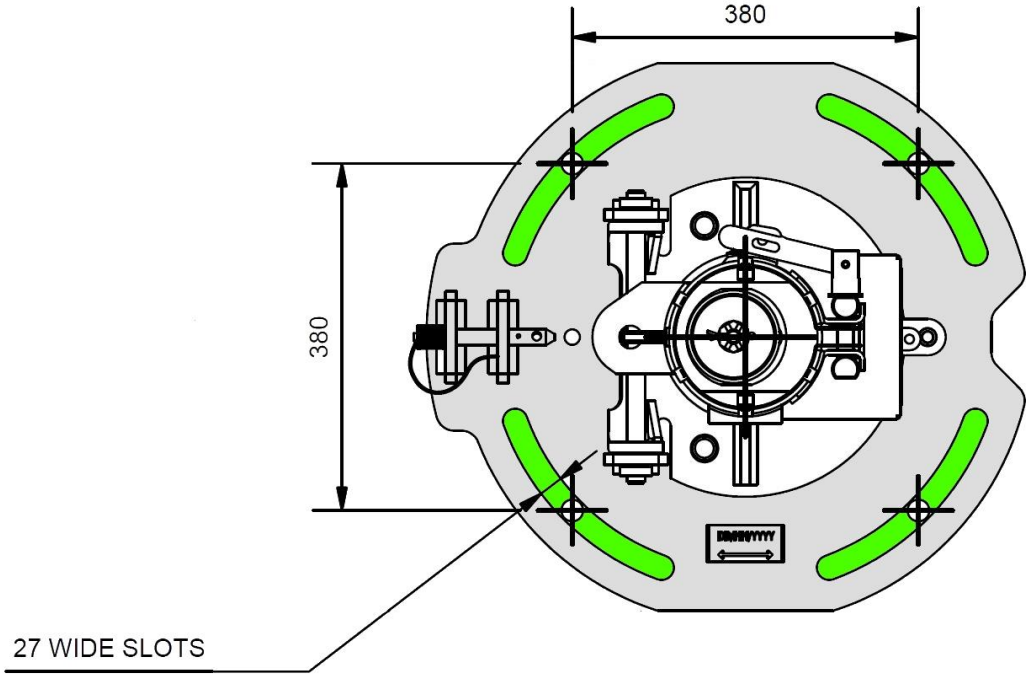
The signal shall be aligned to a point on the ground when sighted from the Trunnion

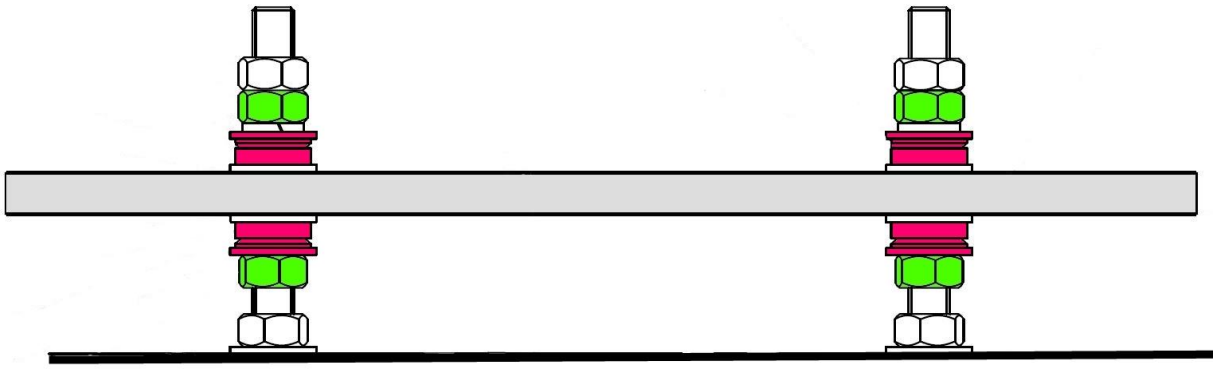
The removable alignment scope unit should be fitted to the Trunnion by screwing the two knurled screws into the threaded holes as shown in the illustration below:





Using the alignment scope to provide visual cues, the signal is adjusted horizontally by rotating the base within the kidney slots and vertically by adjusting the angle of the Trunnion using the securing and adjustment nuts and the spherical washer sets shown in red.





The arbitrary method of sighting to the AWS magnet shall not be used unless specifically authorised by the Signal Sighting Chair and correctly recorded on the latest version of the Signal Sighting Form

The Trunnion can be sighted with or without the signal post installed. This allows the head and post to be fitted at a later date with no further sighting activity required.

When the signal is aligned correctly to the point on the signal sighting form, ensure all the mounting nuts are correctly torque loaded and the alignment scope is removed and stored in its protective case.

An action camera and adaptor plate can be attached to the scope to capture an image of the sighting picture for maintenance records etc. Instructions for fitting the camera are contained in C64.65559 which is supplied with the adaptor plate or on request from Unipart Dorman. (The Action Camera is not supplied by Unipart Dorman and will need to be sourced separately).

Scope and Camera shown fitted to an ALT. The winch Trunnion mounting is identical

Post Installation Checks

The iLS has been designed with Plug and Play installation in mind and is fully tested for light output etc., before despatch from the factory. Unipart Dorman recommends that the only test required is to have the signaller call on the aspects and ensure that the correct colours are displayed by the signal. This advice does not supersede any instructions issued by Network Rail.

Maintenance Activity

The signal design is such that it does not require scheduled maintenance where the lenses are subject to free falling rain. However, Network Rail may however, mandate some additional maintenance activity and this will be promulgated through the normal channels.

There is no provision to carry out any activity with the signal erected. Therefore, it is to be lowered to the horizontal position and supported using the instructions shown in this manual.

Signal Husbandry

If the signals require any cleaning to be carried out, the only mediums approved are water and proprietary detergents.

Do not use any solvent based or abrasive cleaning material as this may irreparably damage the signal.

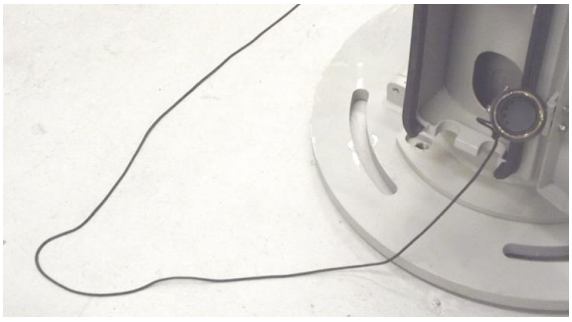
Module Replacement (CLS Module)

Prior to lowering the signal ensure that you have the correct replacement module, specifically with Medium Range signals whether it is wide or narrow beam

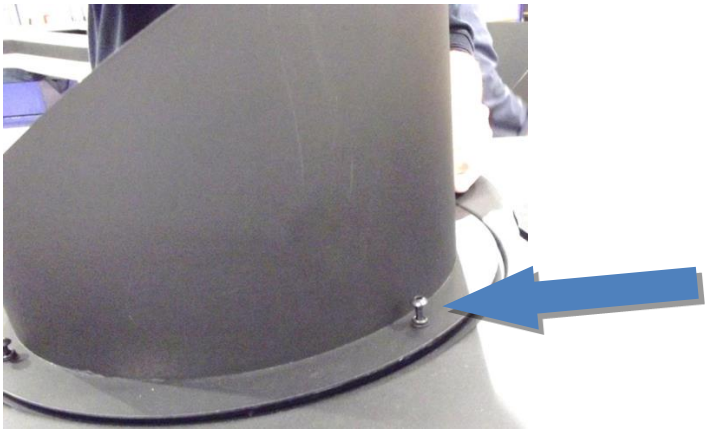
The winch should be fitted as described in this manual and the signal should be lowered to the horizontal position and supported.

Open the Connection Box and disconnect the plug coupler. Attach a piece of tracer cord which is approximately 1.5m longer than the post height to the plug and temporarily secure the other end to a convenient point on the Trunnion. This will allow the new plug to be inserted down the post with ease.

Undo the Trunnion Locking clamp and withdraw the post from the Trunnion sufficiently to allow the end of the module cable to be passed through the bore of the post.



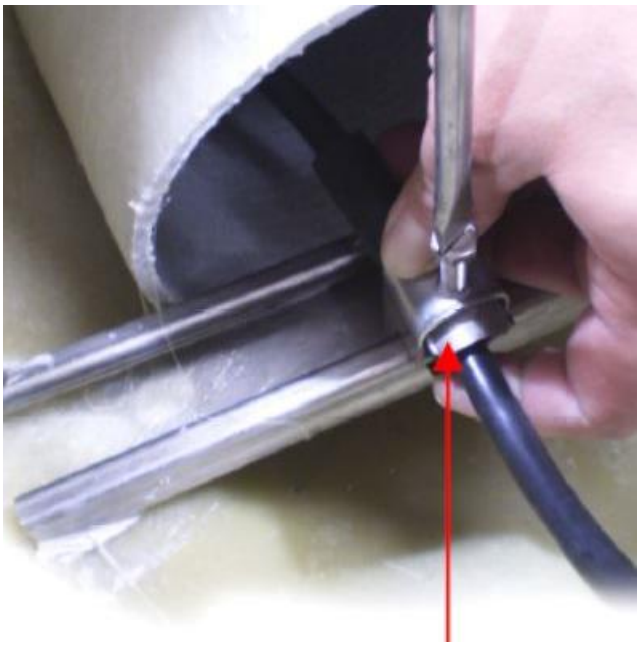
Remove the existing module by undoing the captive screws with a 5mm Allen Key.



Withdraw the module sufficiently to access the inside of the signal head. If the signal is a four aspect variant, disconnect the plug coupler which connects the two modules together.

To reduce the amount of spares that need to be held, all iLS Colour Light Signal Modules have the splitter cable for the second Yellow module attached. If the signal only uses a single Red Yellow Green module the splitter cable will have a blanking cap fitted and it will be secured on the cable clamp bar.

Remove and retain the cable clamps using a flat blade screwdriver

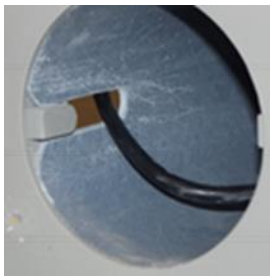


It is then possible to remove the module completely. As the cable is withdrawn the tracer cord and plug coupler will travel up the post and when it reaches inside the signal head can be undone and the module fully removed.

Tie the tracer cord to the plug on the new module and use it to pull the new cable down the bore of the post, guiding the cable through the slot in the bottom of the post and into the connection box. (The tracer cord can then be removed)

Reconnect the splitter cable if the signal has a second module and refit the cable clamp(s). Carefully stow any excess cable inside the post/head and secure the new module in place using the socket headed screws.

Relocate the post in the keyways at the bottom of the Trunnion then the signal can be returned to the vertical position and correctly secured.

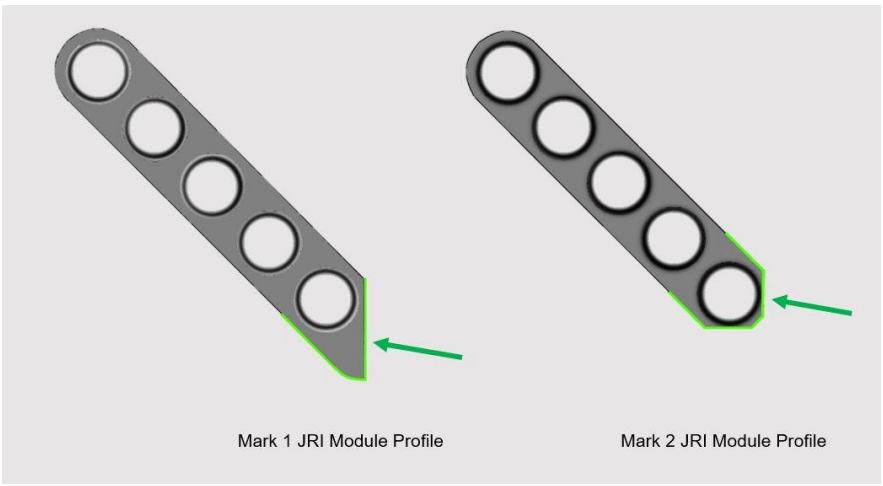


The signal should be electrically connected as shown in the installation section and the post installation tests carried out.

Because the signal alignment has not been disturbed during this process there is no requirement for a signal sighting exercise to be carried out.

Module Replacement (Other Signal Modules)

The Junction Route Indicator Modules were modified to Mark 2 standard to increase interoperability by changing the profile so one module would fit each arm position (1,2,4&5). Ensure the replacement module you have is the correct build standard prior to lowering the signal.



Junction Route Indicator Modules operate at a higher temperature than other modules. Caution should be exercised when replacing these modules to ensure that the residual heat has fully dissipated from the alloy heatsink attached to the back of the modules prior to handling.

Image illustrating the heatsink and short plug coupler connection lead for a PLJI Module

The instructions for lowering and raising the signal should be followed.

Simply unscrew all the captive screws and withdraw the required module sufficiently to disconnect its plug coupler (which may be in the head or in the connection box depending on the module type) and remove.

As the signal structure has not been disturbed there is no need to carry out a signal sighting exercise.

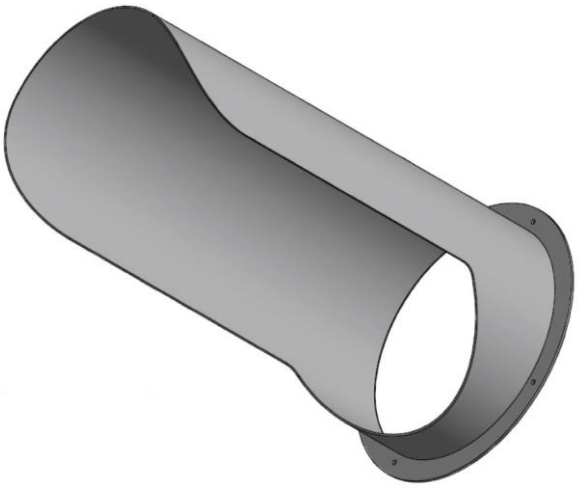
Additional Visors

Whilst Unipart Dorman iLS signals are designed to be very resistant to sunlight effects such as washout or phantom, there are a very small number of signals which directly face East/West that may suffer from the effects of low winter sun. To mitigate these effects Unipart Dorman has a range of extended visors available.

The fitting kits all come with detailed instructions which are also available from Unipart Dorman

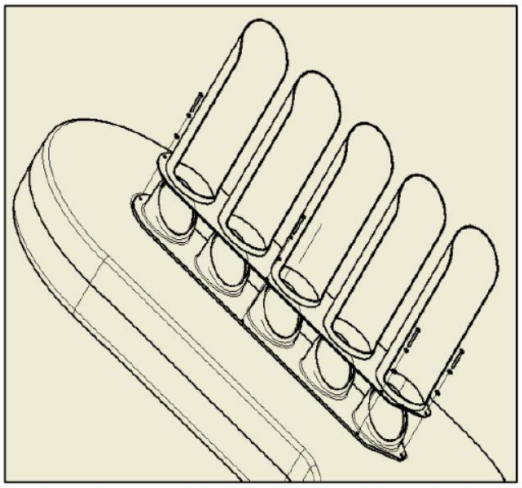
Lens cleaning of iLS signals with extended visors fitted should be scheduled at an interval determined by local policy where the signal is being maintained under ROSE. This is because the lens is no longer directly exposed to free-falling rain necessary for lens cleaning.

Colour Light Signal



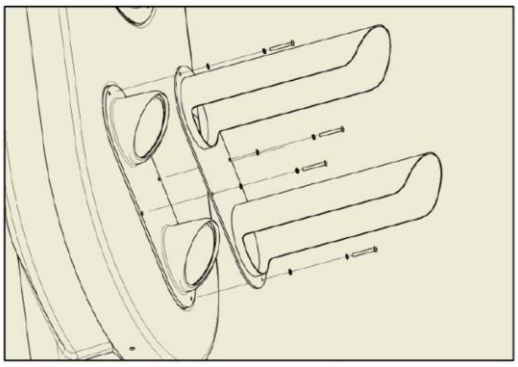
Cat Number	Part Number	Description
086/007488	B20.19436	CLS 600mm Extended Visor
086/007485	B20.19433	CLS 600mm Extended Visor 135° LH Obscuration
086/007486	B20.19434	CLS 600mm Extended Visor 135° RH Obscuration

Junction Route Indicator Arms



Cat Number	Part Number	Description
086/009514	D04.03540	iLS JRI Visor Fitting Kit Position 1 (Mk1 Indicators only)
086/009515	D04.03541	iLS JRI Visor Fitting Kit Position 4 (Mk1 Indicators only)
086/009516	D04.03542	iLS JRI Visor Array Fitting Kit Position 1
086/009517	D04.03543	iLS JRI Visor Fitting Kit Position 2
086/009518	D04.03544	ILS JRI Visor Fitting Kit Position 4
086/009519	D04.03545	iLS JRI Visor Fitting Kit Position 5

Position Light Signal



Cat Number	Part Number	Description
086/009531	D04.03546	iLS PLS Visor Fitting Kit

Wedge Inserts

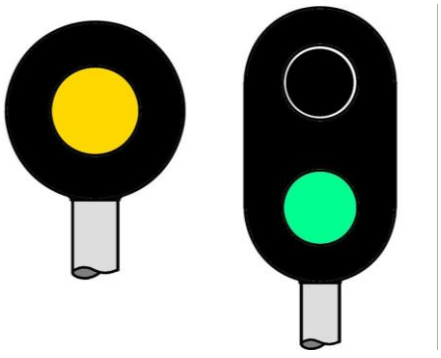
The Junction Route Indicator and Position Light Signal modules can be fitted with a tapered insert to depress the beam angle by 1.5° if required.

Cat Number	Part Number	Description
086/009532	D04.03554	iLS JI Pos 1 or 4 Tapered Insert (1.5°), Mk1
086/009533	D04.03555	iLS JI Pos 1 or 4 Tapered Insert (1.5°), Mk 2
086/009534	D04.03556	iLS JI Pos 2 or 5 Tapered Insert (1.5°), Mk 2
086/009535	D04.03557	iLS Subsidiary Signal Tapered Insert (1.5°)

Blanking Plates

Colour Light Signal

To deliver a taller backboard 3 Aspect Colour Light Signal, a Type 50 head is used with a blanking plate fitted over the aperture where the 2nd Yellow module would ordinarily fit.



3 Aspect CLS options showing a Type 01 and Type 50 with Blanking Plate fitted

Cat Number	Part Number	Description
086/009391	B20.19380	iLS CLS Module Blanking Plate

Position Light Signal

Used where a signal has its aspect configuration changed at site and the module is removed. The plate uses the same mounting screws as the removed module.

Cat Number	Part Number	Description
Contact Unipart Dorman	B20.19283	iLS PLS Module Blanking Plate

Service and Repair

The Trunnion, post/signal head and LED modules have no user maintainable elements (apart from general husbandry requirements) and are intended to be replaced completely should they fail

End of Life Disposal

Wherever possible the component parts and complete assemblies of the Unipart Dorman iLS are designed to be disposed of in accordance with the requirements of the Waste Electronic and Electrical Equipment Regulations 2006. Please contact Unipart Dorman for full details of the procedure to be undertaken when a signal is permanently withdrawn from service for disposal.

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Every effort has been made to ensure the accuracy of the information given in our Publications, but in accordance with our policy of continually improving our products we reserve the right to modify designs and specifications whenever necessary.

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