

APPENDIX 12
WYLIE SAFE LOAD INDICATOR MANUAL

SETTING INSTRUCTIONS FOR
WYLIE MODEL DLT,
DIP(0) and OLP
AUTOMATIC SAFE LOAD INDICATORS
(For Rope Operated Machines)

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INTRODUCTION

Each Indicator is identified by a serial number stamped on the nameplate, and if any difficulty is met either in testing the Indicator or in future maintenance, it is necessary that this Indicator number be quoted either to the Indicator manufacturer or his distributor.

TYPE OF MOUNTING

The DL Indicator is supplied mounted on a variety of steel frames to adapt the Indicator to be suitable for fitting to different types of cranes or in different positions to suit the rope reeving of the crane. Depending on the adaptation the frame may be of DLT type (Figure 1), taking the tension load from a pulley or rope, DLP type (Figure 3), deflecting the hoist rope, or OLP(0) type (Figure 2), measuring the force in one of the crane ropes by deflecting it from its true line by a pulley deflection unit. The end connections and other details of the frames will differ from the illustrations depending on the crane details, and the correct General Arrangement drawing showing the Indicator on the crane is issued with each Indicator.

Either one or two Indicators may be mounted on the frame and in the latter case each Indicator is used for a separate duty, such as blocked and unblocked ratings with rubber tyre cranes or with crawler cranes one may be set to the main boom load curves and the other for the fly jib load curves. It is also possible to use the single Indicator version for two different duties such as blocked and unblocked, but in this case when the crane changes duty it is necessary to reposition the lever at the back of the Indicator to select the different Indicator setting.

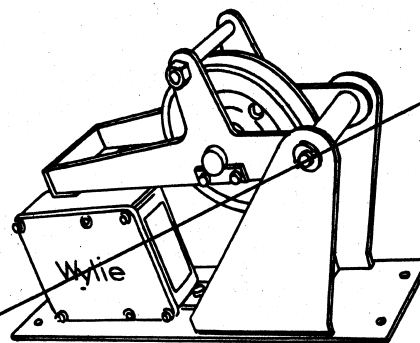
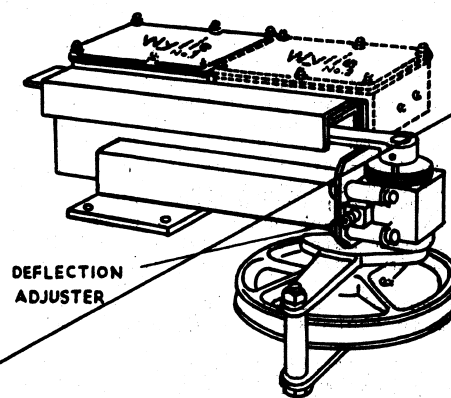
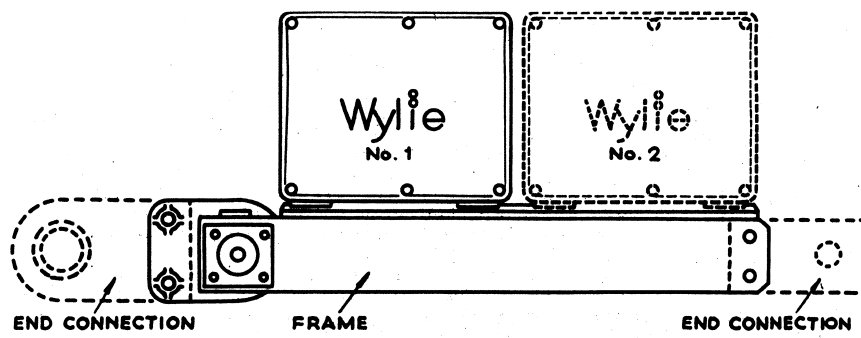
To facilitate possible removal, some DLT Indicators (Figure 1) have bolted end connections to which links are added to suit the crane structure. It is essential that fitted bolts are used for these connections and on no account must clearance bolts be used. If the connections are ~supplied by the crane owner, templates are available from Wylie to correctly space the matching holes in the parts supplied by the crane owner.

HOW IT WORKS

The DL Indicator is shown on Figure 4 and the force from the crane is applied through plunger 14 to the internal leverage system in the Indicator. The leverage system is altered by cam 66 so that depending on the point of contact of roller 23 on the cam, the switches 50 will give warning with different loads.

The cam 66 is rotated by lever 72 (Figure 5a) which is connected to a fixed part of the crane which will cause the lever to assume a different position relative to the Indicator at different crane radii.

A typical arrangement of the cam control on a DLT Indicator is shown diagrammatically on Figure 5a. (Figure 5b shows an alternative method of control using cable control.)



To make the operation of the Indicator clear, the lever carrying the pulley has been shown cranked with an offset about its pivot, thus causing a force on plunger 14 due to the load on the rope but, in most OLT models, the same effect is obtained by making the lever straight and mounting it on an eccentric pivot at O. As the cam is cut closer to its centre the lever in the Indicator control box assumes a position which will permit the Indicator to take a heavier load before the warning signals are given. The mechanism is adjusted prior to leaving the maker's works so that the range of loading which will be met on the crane is within the limits of the cam roller touching the cam holder with heavy loads and being on the extreme surface of the uncut cam with light loads. For this reason each Indicator is only suitable for the crane for which it is supplied.

To agree with the load rating of the crane it is necessary to determine the shape of the cam under actual load test at site. Where blocked and unblocked load curves have to be dealt with by a single Indicator, one sector of the cam is used for the unblocked rating and a different sector is used for the blocked rating. Each sector has to be cut separately and evenly joined up so that when moving the lever at the back of the Indicator to change from blocked to unblocked condition the cam roller can roll freely from one sector to the other (see dotted part of cam in Figure 121. When the cam has been correctly cut the amber light will indicate approach to maximum safe load and the red light and bell will give warning when maximum safe load is exceeded.

MI additional normally closed circuit is fitted to allow the safe load Indicator to operate a cut out (see Figures 7a and 7b.)

Where Indicators are fitted to new cranes, cam cutting is usually completed by the Cranemaker before despatch of the crane, and no further site adjustments are necessary. On certain cranes it is also possible for the Indicator Manufacturer to supply cams already cut to the shape required for the load curves. These bear a "WTC" reference number for identification purposes.

ASSEMBLY ON CRANE

Before the site test, check that the Indicator is fitted correctly to the crane and for this purpose a General Arrangement drawing can be supplied by the Indicator Manufacturer or his distributor. (For certain applications a typical installation drawing only is supplied.)

CAM CONTROL MECHANISM

Indicators will either be supplied with a cam control mechanism similar to that shown in Figure 5a or 5b. The arrangement drawing will show which system is used. In the case of rod type control (see Figure 5a and 6a), first check that the hole A shown in Figure 5a is correctly positioned and connect the control rod between this hole and the correct hole (shown on the Arrangement Drawing) in the lever 72 on the back of the Indicator control box, nearest to the "A" frame shaft. Also check that the length of the rod is correct. With the boom at minimum radius check that angle "B" is not less than 30° and that there is no possibility of lever 72 and the cam rod moving into the "in line" position. If a different angle is required, this will be marked on the Arrangement Drawing. The crane boom should now be lowered from minimum radius position to maximum radius position to check that there is freedom of movement on the cam rod without any causes of stress being developed due to the angle between the levers and the cam rod becoming too acute.

If the boom can be lowered to ground level, then it should also be checked that this throws no undue stress on the cam rod. It will be noted that there is a screwed adjustment on the cam rod permitting it to be altered in length.

For cable type control, see Figure 5b and 6b, the cable should be connected between the disc mounting on the "A" frame shaft and the disc on the back face of the Indicator. The diameter of the two discs should allow an angular movement of the disc on the Indicator box of not less than 60° for change in-main boom position from minimum radius to maximum radius.

If the boom can be lowered to ground level, then it should also be checked that this throws no undue stress on the cable system.

As shown in Figure 6a and 6b, the Indicators may be fitted either with a gear lever to select a different cam sector, or alternatively for a 2, 3 or 4 armed lever, pinned by fixing screw 73 to the cam control lever 72 (see Figure 6a). Both gear lever and star lever can be rotated to different positions to select a new sector of the cam for a different load curve.

With single Indicators on cranes, having only two different rated conditions, e.g. a crane having only one boom used with blocked and free on tyres load curves, the cam control lever 76 has only two arms. In this case attachment of the cam control lever 72 (Figure 6a) to either arm brings into operation either the blocked or free on tyres sector of the cam. On cranes having several boom lengths a 2, 3 or 4 arm cam change lever (item 76, Figure 6a) is fitted to the Indicator so that there may be up to four different sectors of the cam available for the different boom lengths. When the sectors have been used for particular load curves, further sectors must be cut on a new cam. Where this is necessary it is desirable to have a summary chart in the driver's cabin; similar to that shown on page 14 defining the cam sectors and different cam numbers required for each boom length.

WARNING SIGNAL UNIT

Mount the light signal unit and bell in a convenient place, readily visible to the driver and wire up in accordance with the wiring diagram. The standard wiring diagram for the Indicator is given in Figure 7. This wiring diagram is only suitable for cranes having 12 or 24 volt starting equipment and where this voltage supply is available to the Indicator. On cranes not fitted with a battery, the Indicator can be supplied with its own battery, but a separate wiring diagram will be required, and this is obtainable either from the manufacturer or distributor. A special diagram, is also required if the Indicator is to be fitted to an electric crane where mains supply is used. On Indicators fitted to new cranes, the crane maker sometimes departs from the wiring diagram on Figure 7, and in such cases reference should be made to the diagram in the "Cranemaker's Handbook".

Single box Indicators are supplied with signal units suitable for subsequent conversion to a twin unit if the Indicator design permits. It is important that the wires to the Indicator switches are connected to terminals 4, 5 and 6 of the Light Signal Unit. It will be noted from Figure 7 that the switch in the main boom Indicator is cross connected so that this Indicator is always in circuit.

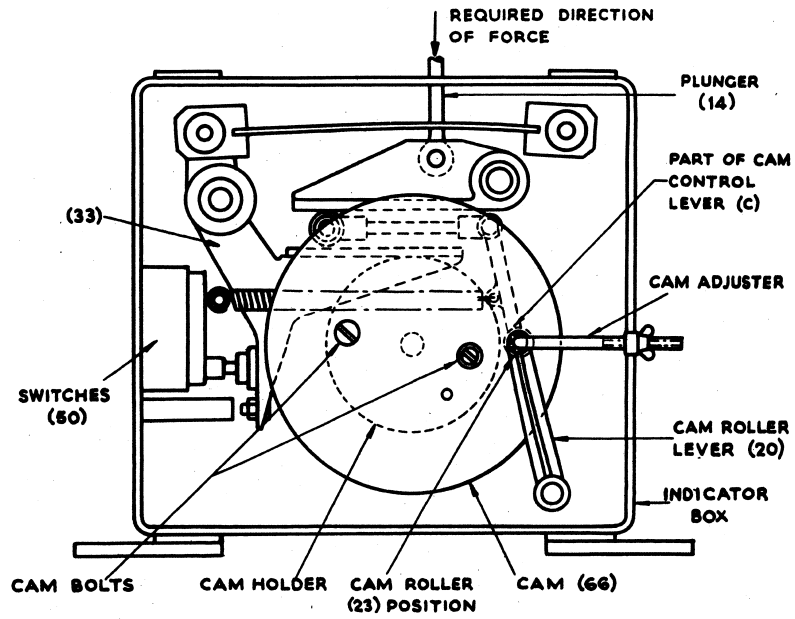


Fig. 4

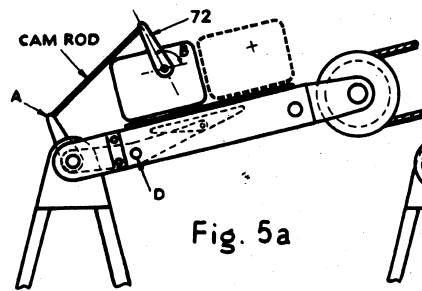


Fig. 5a

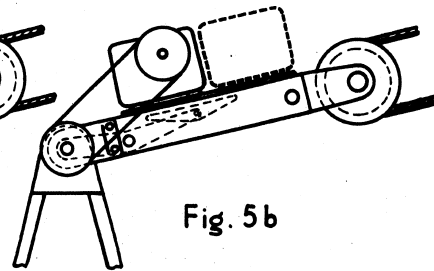


Fig. 5b

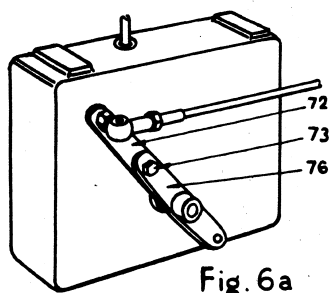


Fig. 6a

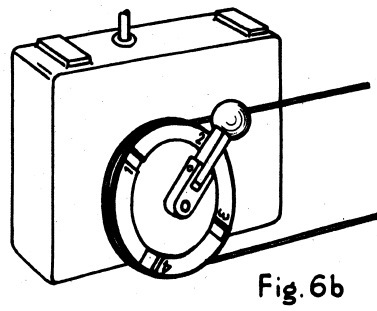


Fig. 6b

To test that the Indicator has been correctly wired, lever 33 (Figure 4) can be pushed clockwise until it operates switches 50. The amber light is operated by the front switch and the red light and bell by the rear switch. On modern Indicators the striker for the red switch is adjustable but this must only be altered after carefully reading the section of these instructions headed "Load Test".

Before despatch the switches are adjusted so that the amber light will show with approximately 10 per cent lighter load than the red light signal. During the load test the cam will be cut to make the red light show at given test loads, and if it is desired to alter the load at which the amber light gives warning, perhaps to increase the degree of warning of this signal, the amber switch can be adjusted by means of a lock nut and screw.

A push button is fitted to the light signal unit. If the red light and bell do not function when the button is pressed, this indicates a fault either in the lamp, bell or connecting wiring. On certain Indicators a green light is also fitted and this stays on while the crane is operating.

The bell must be placed in a position where it will give a clear warning both to the crane driver and any other person in the immediate vicinity of the crane. On twin box Indicators a changeover switch is provided on the warning unit. This switch permits selection of the correct Indicator to suit the operating conditions, e.g. lifting duties on outriggers, or free on tyres.

LOAD TEST

Unless specified by the maker it is best to test the Indicator first with the minimum boom length and also to start with the highest rated crane loadings. With twin Indicators normally the Indicator furthest from the jib head is the one which should be used for the heaviest rated loads. Any deviations from this ruling will be shown on the General Arrangement drawing. The positions of the lever 76, or the gear selector lever, shown in Figure 6a and 6b, must be clearly marked for each cam sector which is cut. It is normal also to stamp the sector of the cam which is cut with the duty concerned, e.g. 15 m boom length on outriggers.

DLT Type Indicators

The full test loads corresponding to all the rated radii on the Crane Maker's Load Schedule should be available before starting the test. When lifting the test loads referred to in the following instructions the radius should be checked by measuring tape and it is also necessary that the crane should be on level ground with the tyres correctly inflated for duties free on wheels.

Instead of arranging for the bell to ring at full rated loads it is sometimes permissible, if adequate safety margins are available, to allow the red light "Overload" signal to be given slightly in excess of the rated load. Unless otherwise stated on the General Arrangement drawing, it is recommended that this overload should never exceed 10 per cent above the crane maker's ratings. In the following test instructions this load will be referred to as the "Test Load".

To avoid damage to the Indicator it is delivered with the cam roller removed and it is most important that the first part of the test is completed before the cam roller is fitted. Cutting the cam without the roller in position is possible by treating the portion of lever 20 marked C in Figure 4 as if it were the roller. This permits the position of the cam roller to be scribed on the cam blank prior to cutting and the approximate point of contact of the roller can thus be marked on the cam blank. During the test load, lever 20 can be held in different positions by fitting the hook bolt supplied with the Indicator, in the manner shown in Figure 8.

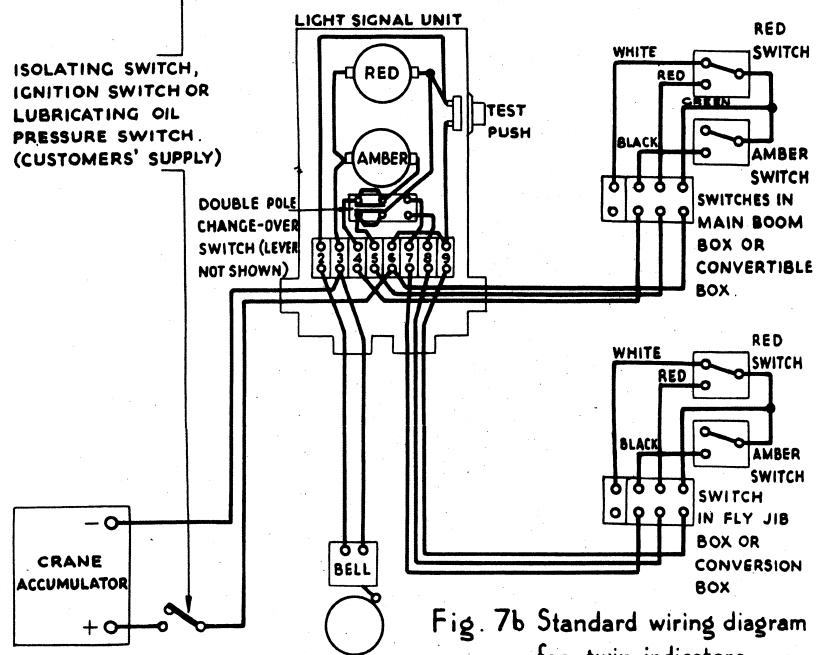
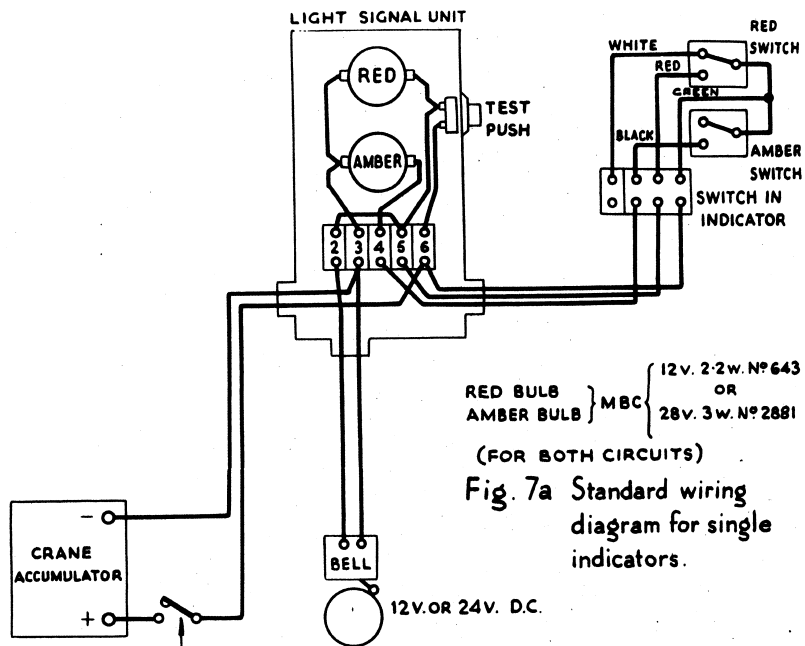
Before calibration is started the cam follower adjuster nut E must be turned to bring the roller cam lever close to the circular cam holder. Each cam point should then be found by tightening the nut E so that the cam lever gradually moves away from the cam holder until the correct position is found when lifting the Test Load at the correct radius. Until the cam is finally cut the cam lever 20 must be kept against the cam holder otherwise serious overloading of certain parts of the Indicator will occur.

With the boom at minimum radius (boom hard in) the appropriate Test Load for this radius should be lifted with the hoist block reeved to the correct number of falls for that load and position of cam lever 20 adjusted until the red light just shows. A mark should be made, on the face of the cam by scribing round the boss C of the lever 20 and also scribing a radial mark approximately where the cam roller would make contact with the same as shown in Figure 8. If the same load rating also applies to a greater radius than the minimum radius then the above test must be repeated at the new radius and also at intermediate points as considered necessary.

The test procedure should be repeated with the appropriate Test Load at each different radius of the crane maker's schedule of load ratings (Figure 9 shows the subsequent form of the cam). The points of contact where the roller would touch the cam at each rated radius are then joined by a curve as shown in Figure 10. The shaded area should be cut away to within 1 mm of the curve and the cam carefully replaced in its correct position. Now the cam roller can be fitted. Tighten the roller set screw and check that the roller is still free to rotate. Remove the hook bolt and clamp.

If it is found when lifting the Test Load that the desired position of the cam roller is beyond the surface of the cam blank or alternatively fouls the cam holder, then advice should be obtained from the Indicator maker or distributor before the test can proceed.

The Test Load should again be lifted at each rated radius and the cam filed at the points of contact of the roller with the cam until the red light just shows and the bell rings. During this part of the test it is best to lower the load to the ground and lift slowly after each trial filing.



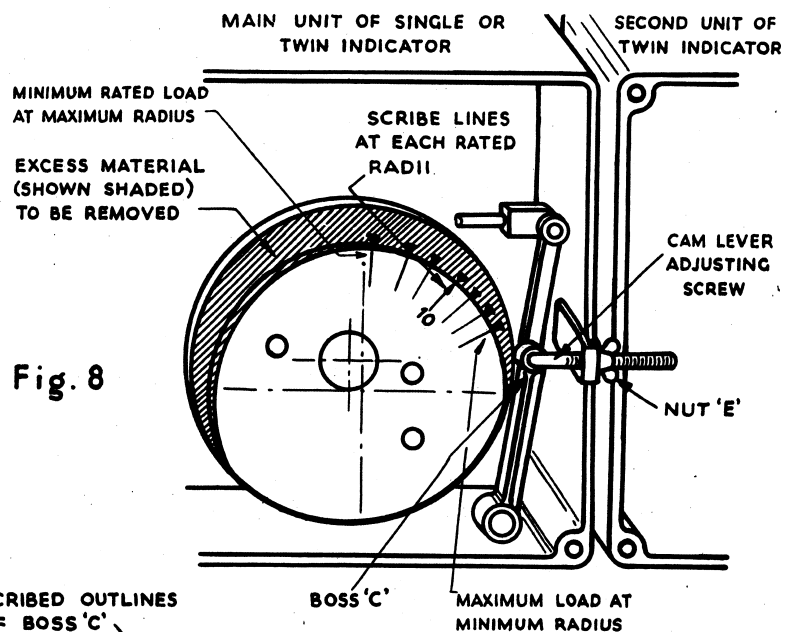


Fig. 8

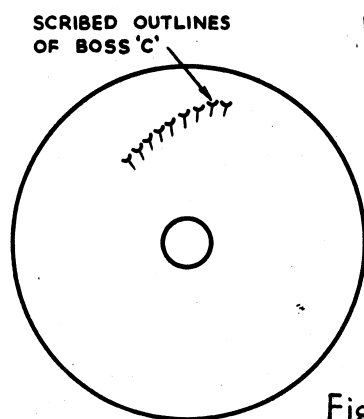


Fig. 9

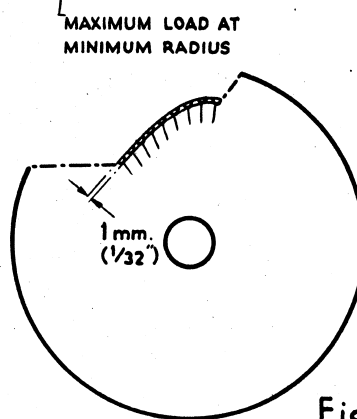


Fig. 10

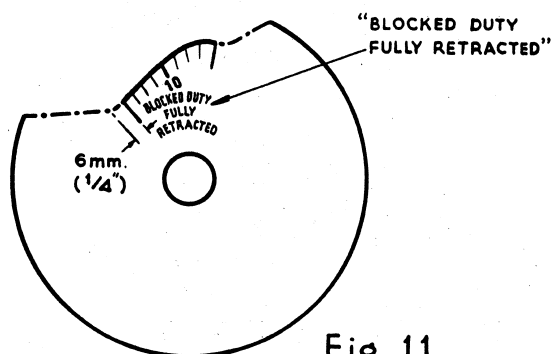


Fig. 11

It will assist future maintenance if the roller contact point at a rated radius halfway between minimum and maximum is clearly marked with a chisel cut and with an identifying number corresponding to the radius. On the typical cam in Figure 11 the number "10" shows that the chisel mark has been made at the 10 m radius. The contact point at maximum and minimum radii should also be marked with a deep scribe or chisel mark which will be permanent.

Each end of the cut portion of the cam should be extended 6 mm at the same radius as the last mark. If the Indicator has to be adjusted for only one condition a curve is drawn as shown in Figure 8 and the shaded portion removed, but if it has to be adjusted for more than one condition, e.g. blocked or unblocked, or for different lengths of boom, then the cam roller should be removed before proceeding further. With the test and arm 76 (see Figure 6a), or the selector lever (see Figure 6b), should be rotated to a different position bringing a fresh part of the cam adjacent to the cam roller. The complete test should then be repeated with the new load ratings and when the surface of the new cam has been finally completed it can be merged into the previous cam surface by a smooth curve. Figure 12 shows the correct trimming of a combination cam with two working conditions.

Where two Indicators are fitted to a common frame the foregoing test procedure applies individually to each Indicator.

On certain cranes having alternative boom lengths, the shorter boom may have blocked and unblocked ratings but the long booms only have blocked ratings, and cams for these are therefore only required in the blocked Indicator box. The unblocked cam should NOT be left uncut but should be trimmed so that there is a smooth curve joining the cut sectors of the cam as shown in the two sector cam of Figure 12.

Check that the cam bolts have been tightened and replace the cover.

Where Indicators are supplied complete with the crane as original equipment they will have been adjusted by the crane maker to cover certain boom variations and care must be taken that these ratings and boom lengths are known to the crane operators and that no other combinations are used without reference to the crane maker.

DLP(0) and OLP Indicators

This type of Indicator is fitted with a transit bolt to prevent damage due to mishandling before the Indicator is erected on the crane. The bolt, which is painted white, locks the pulley lever solid with the pulley frame and must be removed before proceeding with the Load Test.

The Load Test as described for the OLT type Indicator also applies to DLP(0) and DLP Indicators. If it is found when lifting the Test Load that the position of the cam roller is beyond the surface of the cam blank, then the pulley adjuster should be used to vary the rope deflection.

The adjustment is clearly marked on the General Arrangement drawing and should be used to adjust the force on the Indicator so that, with the maximum derrick rope force, the red light and bell operate when the cam roller is close to the cam holder. This permits the full range of the cam blank to be available for the range of forces arising from the maximum to minimum loads. Normally the rated load at maximum radius will give the maximum derrick rope force for any given boom. After selection of the correct position, carefully lock the nuts of the adjuster and then proceed with the test as described for the OLT type.

Where DLP(0) units are supplied as original crane equipment on multi-boom length cranes, it is imperative that the cranemaker's recommended length of pendant tie ropes are closely adhered to for each jib length combination, as any variation from the lengths used during the original calibration will affect the accuracy of the unit. When pendant ropes are renewed the accuracy of the Indicator should be checked by lifting a Test Load.

It is essential that fitted bolts be used to fasten the Indicator baseplate to the bridge to ensure accurate positioning of the Indicator if it is removed at any time for repair and on re-assembly these must be replaced by clearance bolts.

A similar adjuster is supplied for DLP Indicators, and this is illustrated on the Arrangement Drawing of the Indicator. If the maximum and minimum load range for this Indicator cannot be obtained within the depth of the cam profile, the Indicator manufacturer or distributor should be contacted.

Load Test of Constant Load Indicator

This type of Indicator can be supplied either in OLT, DLP(0) or DLP specification. It is used on those cranes where the Indicator need only be set to one load and because of this a cam control mechanism is not required and the internal cam, which is necessary to accommodate variable loads, is also not required. The form of this Indicator is shown in Figure 13. The Indicator is set by adjusting the screw 151, thereby adjusting the position of the track rollers shown in Figure 13. This screw is then locked in the position necessary to just bring on the Indicator signal. Care should be taken when adjusting the screw under test load that the track rollers line up with the roller track. When the adjustment has been completed the alignment should be re-checked.

Special Note

Most Indicators are fitted with an adjustable striker which activates the red warning switch. Normally it is never necessary to adjust this striker. Only if the Indicator is supplied with a factory cut cam may this striker be adjusted by a small amount (not more than .010"). This adjustment may be carried out when the initial Test Load on the basic boom is lifted, so that the Indicator setting can be exactly set to the load concerned, without adjustment to the already established profile of the cam. After this adjustment has been made the striker should be locked and a check made to ensure that the red signal is just on for a particular load. Checks should then be made to ensure that the signal is being given correctly at other loads, at other radii, and if the loads at which the Indicator gives a signal are

varying from the correct test loads, the Indicator manufacturer or distributor should be contacted before proceeding further.

MAINTENANCE

To check that the switches are operating, it is desirable at weekly intervals to remove the cover from the Indicator and push the switch striker until the two switches progressively close, and check that they are correctly operating the warning signals. When making this routine check on the switches look for nuts or other parts which may have slackened by vibration and tighten where necessary. The lever pivots of the Indicator are greased for life and do not require attention, but thin oil should be dropped on the cam roller and spindle and rubbed on any parts which show signs of rust.

A light grease should be coated over the length of cam control cable or some light oil applied to the joints at either end of the cam control rod...whichever is applicable.

If the cam control rod/wire is damaged, it should be immediately repaired and, on replacement, a check must be made that it rotates the cam to the correct angular position. For this purpose a load is derricked to the radius corresponding to the mid-angle chisel mark on the cam (see Test Instructions page 8).

If the cam roller does not line up to the scribe mark the cam control rod or wire should be adjusted in accordance with the Indicator arrangement drawing to correct the error. When making this adjustment the radius of load should be measured by measuring tape with the crane on level ground. This method of checking the cam position should always be used if the Indicator has been removed to permit repairs or maintenance of the crane. By derricking to minimum and maximum angle and comparing the points of contact of the roller with the scribed marks on the cam, a check can be made that the cam control mechanism is working correctly.

If it is necessary to replace a switch or other part of the Indicator then the accuracy of the warning signals will have to be checked by lifting a test load at rated test radius. If the red light comes on too soon the striker operating the red switch (nearest back of Indicator) should be adjusted.

Under no circumstances should the cam be filed, otherwise a complete series of load tests must be carried out. The red switch movement is limited by a stop hitting lever 33 (Figure 4) the clearance between lever 33 and stop should be adjusted to between .015" and .020" when the red switch has just operated.

An optional extra for tension type units (DLT types) is the provision of a lock out device for use when a crane is converted for dragline usage. This prevents the load from the operating lever being transferred to the DL box.

When ordering spare parts always quote the serial number of the Indicator and the part number given on the Spare Parts List.

Typical Duty Summary Table

Box No.	Cam No.	Cam Sector	Duty	Boom Length(s)
1	A	1	BLOCKED	50 FT.
1	A	2	BLOCKED	80 FT. + 10 FT. FLY
1	A	3	BLOCKED	60 FT.
1	A	4	BLOCKED	60 FT. + 10 FT. FLY
2	B	1	FREE	50 FT.
2	B	2	FREE	60 FT.
2	B	3	FREE	70 FT.
2	B	4	FREE	80 FT.
1	C	1	BLOCKED	70 FT.
1	C	2	BLOCKED	70 FT. + 10 FT. FLY
1	C	3	BLOCKED	80 FT.
1	C	4	BLOCKED	80 FT. + 10 FT. FLY

ADDENDUM TO MAINTENANCE INSTRUCTIONS

PLEASE NOTE IF HARDWOOD PACKING BLOCKS ARE USED FOR INSTALLATIONS, IT IS RECOMMENDED THAT THE BOLTS AND NUTS SECURING THE BLOCKS BE CHECKED FOR TIGHTNESS AT LEAST ANNUALLY

SUMMARY OF DO'S AND DONT'S

1. Never use an Indicator except on the crane for which it was supplied.
2. Test the warning signals each shift by using the push button (page 9).
3. At the initial load test do not place the cam roller in position until the cam has been cut to shape (page 14).
4. With a single Indicator having separate cam sectors for blocked and unblocked load curves, always use the blocked sector when ¹ lifting the boom from the ground.
5. When changing cams do not have a load on the crane hook. It is advisable to position the boom at minimum radius.
6. Where the Indicator has more than one cam sector always be sure that the correct cam sector has been selected to suit the boom length or operating condition.
7. With twin Indicators always be sure that the switch on the Light Signal Unit is in the correct position for the operating condition being used.
8. Be sure that the rope reeving is the same as used for the Indicator test.
9. If the cam control rod/wire or other portion of the Indicator is damaged, repair it immediately. Then check the Indicator setting as described on page 12.
10. If the cam control rod or wire is removed, pay particular attention to the instructions on page 14.
11. Cover nuts should be evenly tightened to ensure that the Indicator is waterproof, replacing seal if necessary.

PATENTS

The Indicators described in these Instructions may include items covered by British Patent Nos. 978,822; 980,132; 133,756; 183,190; 191,866; 310,012; and U.S.A. Patent Nos. 3,123,814; 3,148,659. Other British and Foreign Patents pending.

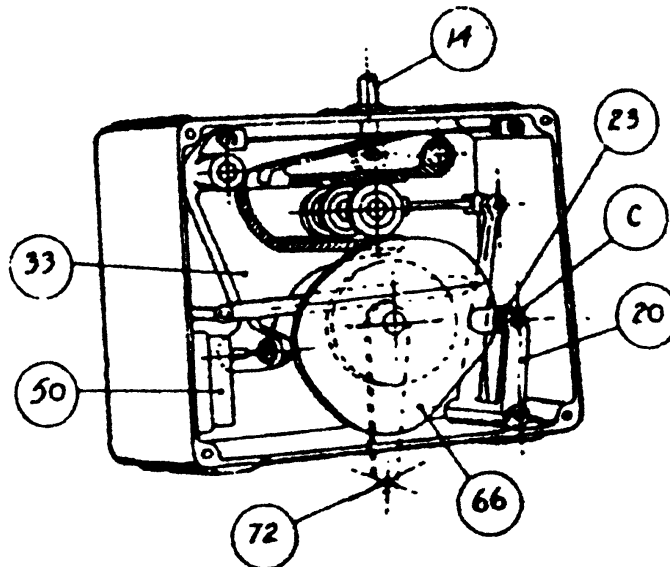
Type DL Safe Load Indicator
Supplementary Checking Instructions
When Replacing A Cam Control Rod or Ancillary Parts

If the cam control rod is damaged or bent it should be immediately *replaced* and a check must be made that it rotates the cam to the correct radius positions. For this purpose, the load is derricked to the radius corresponding to the mid-radius chisel mark on the cam (see Standard Test Instructions) for the relevant cut-sector for the jib length in use. If the cam roller does not line up with the scribe mark the length of cam control rod can be adjusted to correct the error. When making this adjustment the radius of load should be measured by a measuring tape.

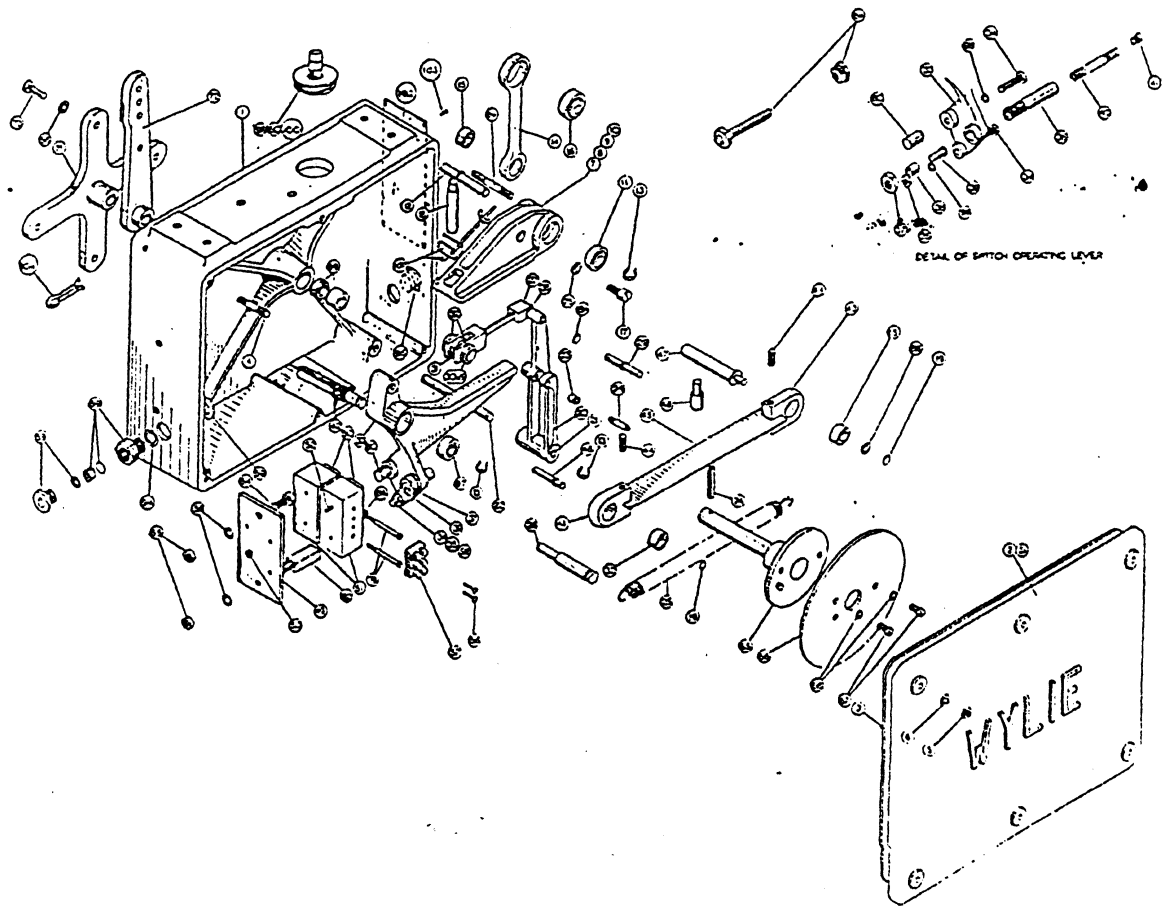
If the chisel mark has not been made, then by derricking-in to minimum, and then out to maximum radius and comparing the points of contact of the roller with the scribe marks on the cam, a check can be made that the cam rod has been replaced in correct hole of Lever 72 and that the length of rod is correct.

On certain cranes the anchor bracket for the rod is dowelled to the 'A' frame shaft and it is possible that this may have been moved. If, therefore, the original movement cannot be obtained by utilising the existing position of anchor there is no alternative but to set up the cam control mechanism as specified on the GA drawing and re-calibrate to our standard instructions.

FIG. 4



SPARE PARTS LIST



IMPORTANT. It is essential to quote the Unit Number when ordering spares.

TYPE D.L. INDICATOR

The Deeside Railway Crane Manual

Page No. 1

Wylie Weighload

BILL OF MATERIALS

03/02/93

Bill of Materials for WS205

PARIS - D.L.SYSTEM

Level	Part Code	Description	Qty	Ref	Status
1	10-41	CAM ADJUSTER BOLT/CLIP ASSY	1	0107	
1	29-18	4-ARY CAM CONTROL LEVER	1	0071	
1	30-11	PLUNGER PIN EXTERNAL	1	9010	
1	B7-7/2	BOX COVER	1	0002	
1	BE0001	PRIMARY LEVER BRG. (EG-01)	1	0011	
1	BE0002	PLUNGER INT BRG + STRUT BRG	1	0015	
1	BE0003	PLUNGER EXT. BRG	1	0016	
1	BE0005	SW./OP. LEVER BRG. (BG-05)	1	0097	
1	FD0024	TRACK ROLLER BEARINGS	1	0032	
1	DD0001-3	DUST SHIELD (DS-01)	1	0028	
1	BGS-0436	MICROSWITCH MOUNTING SCREW	1	0054	
1	ERG001	RUBBER BUNG	1	0055	
1	ES0001	SPRING - AMBER STRIKER	1	0040	
1	LS0024	CAM LEVER SPRING	1	0025	
1	BS0034-2	CAM LEVER SPRING - STD	1	0025	
1	EU0001	CAM LEVER BUSH (BO-01)	1	0021	
1	BU0003	PL. OILITE 3/8"X 1/4"X 1/2"	1	9000	
1	BU0004	AMBER STK. BUSH (BO-04)	1	0038	
1	EU0005	PL. OILITE	1	9001	
1	BU0075	CAM HOLDER BUSH (BO-05)	1	0069	
1	BY0405	COVER WASHER (Fibre Washer)	1	0006	
1	EG0001	CABLE GLAND 16mm LONG THREAD	1	0059	
1	EW0001	MICROSWITCH	1	0050	
1	EW0002	MICROSWITCH BASE	1	0051	
1	FA1201	COVER NUT (AERO NUT)	1	0005	
1	FF1005	LOCK NUT	1	0035	
1	FG1501	CAM HOLDER SCREWS	1	0067	
1	FG1510	MICRO SW. BASE SCREWS	1	0052	
1	FK0009	SHAKEPROOF WASHER 6MM	1	0068	
1	FL1504	MICRO SW. BASE LOCK NUT	1	0053	
1	FR1711	TERM. BLOCK SCREW	1	0058	
1	FS1007	RED STK & O/L BOLT	1	0034	
1	FT0016-2	COVER STUD SHORT-(10-46)	1	0004	
1	FT0017-2	COVER STUD LONG (10-40)	1	0096	
1	GC0001	PRIMARY LEVER CIRCLIP (C1-01)	1	0013	
1	GC0002	TRACK ROLLER CIRCLIP (C1-02)	1	0019	
1	GC0003	CAM LEVER LINK CIRCLIP (C1-03)	1	0019	
1	GR0006	ROLL PIN ASSEMBLY	1	0074	
1	GR0005	ROLL PIN ASSEMBLY	1	0074	
1	MF0139-2	SWITCH MOUNTING PLATE	1	0049	
1	MF0140-2	CAM BLANK 6.22"(10-58)	1	0066	
1	MF0141-2	CAM BLANK - 6"(10-50)	1	0066	
1	MG0016-2	GROMMET + EH0001/2	1	0050	
1	MG0023-3	CAM CONTROL LEVER (29-32)	1	0072	
1	MG0024-3	1 ARY CAM INDEX LEVER (29-14)	1	9002	
1	MG0036-2	PLUNGER (10-09)	1	0014	
1	MG0037-1	PRIMARY LEVER 66 LB	1	0007	
1	MG0053-1	BOX COVER	1	0002	
1	MQ0052-3	AMBER STRIKER PLUNGER (10-22)	1	0039	
1	MQ0053-3	AMBER STR. PLUNGER (10-23)	1	9003	
1	MQ0064-3	STRUT ANCHOR (10-26)	1	0043	
1	MQ0066-3	AMBER STRIKER SPRING HOLDER	1	0036	
1	MQ0067-2	ADJUSTABLE RED STRIKER & NUT	1	0064	

Wylie Weighload

BILL OF MATERIALS

03/02/93

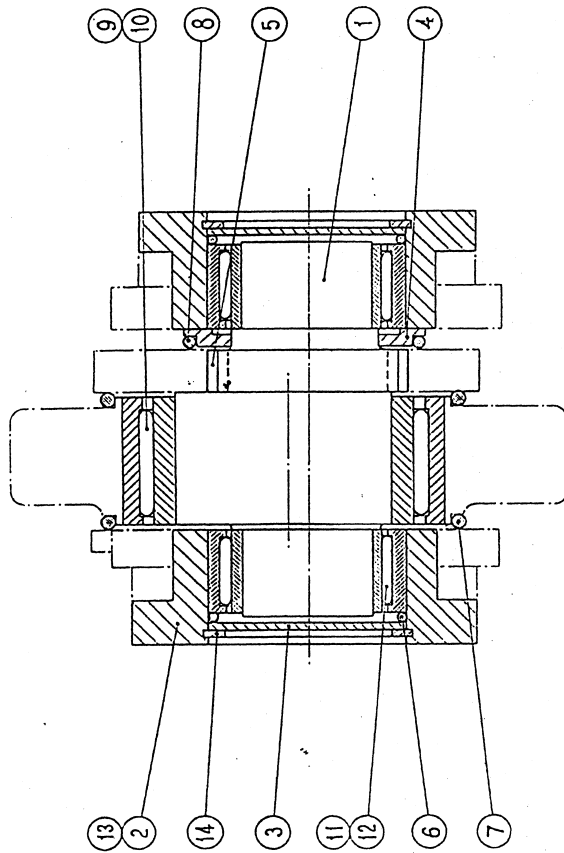
Bill of Materials for WS205

PARTS - D.L.SYSTEM

Level	Part Code	Part	Description	Qty	Ref	Status
1	MQ0068-2		OVERLOAD STOP PIN	1	0082	
1	MQ0069-2		CAM HOLDER (EXT RANGE)	1	0065	
1	MQ0070-2		MICRO SWITCH BOLT	1	0078	
1	MQ0071-3		CAM ROLLER AND BUSH	1	0023	
1	MQ0074-2		TRACK ROLLER	1	0031	
1	MS0047-3		CAM ROLLER SPINDLE	1	0024	
1	MS0049-3		DUMMY PLUNGER PIN EXTERNAL	1	9011	
1	MS0052-2		SW. OP/LEVER PIVOT (10-24)	1	0042	
1	MS0053-3	- 17	PLUNGER PIN (INTERNAL)	1	0017	
1	MS0054-3		STRUT ANCHOR PIN	1	0046	
1	MS0055-3		STRUT ANCHOR PIN (10-28)	1	0047	
1	MS0056-3		PRIMARY LEVER STOP (10-11)	1	0018	
1	MS0061-2		TRACK ROLLER PIN	1	0030	
1	MT0100-3		PRIMARY LEVER SPACER	1	0075	
1	SA-01		3 ROLLER TRACK ASSEMBLY	1	0031	
1	SA-02A		STRUT PLATE ASSEMBLY	1	0045	
1	SA-03		AMBER STRIKER ASSEMBLY	1	9004	
1	SA-05		PLUNGER ASSEMBLY	1	9005	
1	SA-06		SWITCH OPERATING LEVER ASSY.	1	9006	
1	SA-07		PRIMARY LEVER ASSEMBLY	1	9007	
1	SA-08		CAM ROLLER LEVER ASSEMBLY	1	9008	
1	SA-09		MICROSWITCH ASSEMBLY	1	9009	
1	UC0001-2		COVER GASKET	1	0003	

MG0048-2. PAIR OF DRIVE CABLES
DRAWING B7250/1

MS0060-3 - 26 - STRUT ANCHOR. STUB.



PARTS LIST

DLT 2 1/2 - 7 ECCENTRIC ASSEMBLY

When ordering, Parts List, Item and Code No. must be stated.

Item No	Code No	Description	No. Off	Item No	Code No	Description	No. Off
1	31-01	Eccentric Pin	1	6	31/0007	O Ring (Side Bearing)	2
2	31-03	Bearing Housing	2	7	31/0005	O Ring (Centre Bearing)	2
3	31-04	End Caps	2	8	31/0004	O Ring (Thrust Washer)	1
4	31-05	Thrust Washer	1	9	31/0003	Centre Bearing (Race)	1
5	31/0002	Key	2	10	31/0002	Centre Bearing (Sleeve)	1
				11	31/0004	Side Bearing (Race)	2
				12	31/0005	Side Bearing (Sleeve) - X	2
				13	31/0017	Bearing Housing Screw	6
				14	31/0008	End Cap Circlip	2
				0		Eccentric Assy. comprising Items 1-14 inclusive.	Assy.

This parts list is valid only for units produced since September 1987. For units produced before that date, or if any query arises, contact Wylie Part Sales.

Wylie
SYSTEMS