



Dorman Long Technology

Strand jack systems

Strand jacks, power packs and control systems





Introduction

Strand jacks offer an economic, compact and highly controllable method for carrying out heavy lifting and skidding operations. This is particularly true when heavy loads need to be moved through long distances or have a large number of lifting points. We offer complete systems, comprising strand jacks, power packs and control systems together with on site supervision and training and offsite engineering.

For our range of strand jacks from 15 tonnes to 1022 tonnes please see pages 3 to 16.

For our range of hydraulic power packs please see pages 17 and 18.

For our range of control systems please see pages 19 to 23

We have been designing, manufacturing and using hydraulic strand jack systems since 1992 for use in the construction of bridges, refineries, offshore structures, large roof structures, power stations and other projects where these systems can be used to best advantage. The heavy lifting and skidding operations performed using this equipment are usually critical to the success of a project and it is therefore essential that the equipment is robust, reliable and easily serviced. All our jacking systems are 100% designed and developed in-house to international standards and designed and manufactured in accordance with our accredited ISO 9001 quality management systems. Our systems are designed for safety, long life, robust performance and ease of maintenance. To date we have manufactured over 420 strand jacks for clients all over the world, with a combined lifting capacity of over 94,000 tonnes.

All our systems are supplied with a comprehensive manual for the operation and maintenance of the equipment, including a full set of test certificates and a section giving guidance on method statements, risk assessment and health & safety with examples from our own heavy lifting projects. We offer on-site support, advice and training given by our own heavy lifting Site Supervisors to ensure that the equipment is used safely and properly maintained. We are also able to offer expert in-house engineering advice to our clients on how to use the equipment to best advantage, including detailed design of temporary works.

All our jacks and power packs can be monitored and controlled by a single operator using either our DL-M manual control system or our DL-P40 computer controlled system.



DL-S588 strand jacks undergoing back to back 125% load test prior to delivery

Strand Jacks.

Our strand jacks range from the single strand DL-S15 through to the 66 strand DL-S1022 as summarised below, and are all designed to be suitable for use with both 18 mm 7-wire drawn strand or 15.7 mm 7-wire super strand to BS 5896/3-1980. General arrangement drawings of these strand jacks and fixed anchors are given on the following pages. The following table summarises our range :

	DL-S015	DL-S046	DL-S062	DL-S108	DL-S185	DL-S294	DL-S418	DL-S588	DL-S697	DL-S836	DL-S1022
Safe working load, tonnes (18 mm 1700 N/mm ²)	15	46	62	108	185	294	418	588	697	836	1022
Safe working load, tonnes (15.7 mm 1860 N/mm ²)	11.4	34	45	79	136	216	307	432	512	614	750
Safe working load, tonnes (15.7 mm 1770 N/mm ²)	10.8	32	43	75	129	205	291	410	486	583	713
Number of strands	1	3	4	7	12	19	27	38	45	54	66

The safe working loads given above are for 18mm and 15.7mm 7-wire strand complying to BS 5896/3-1980. Please note that different grip sets must be used for each size of strand.

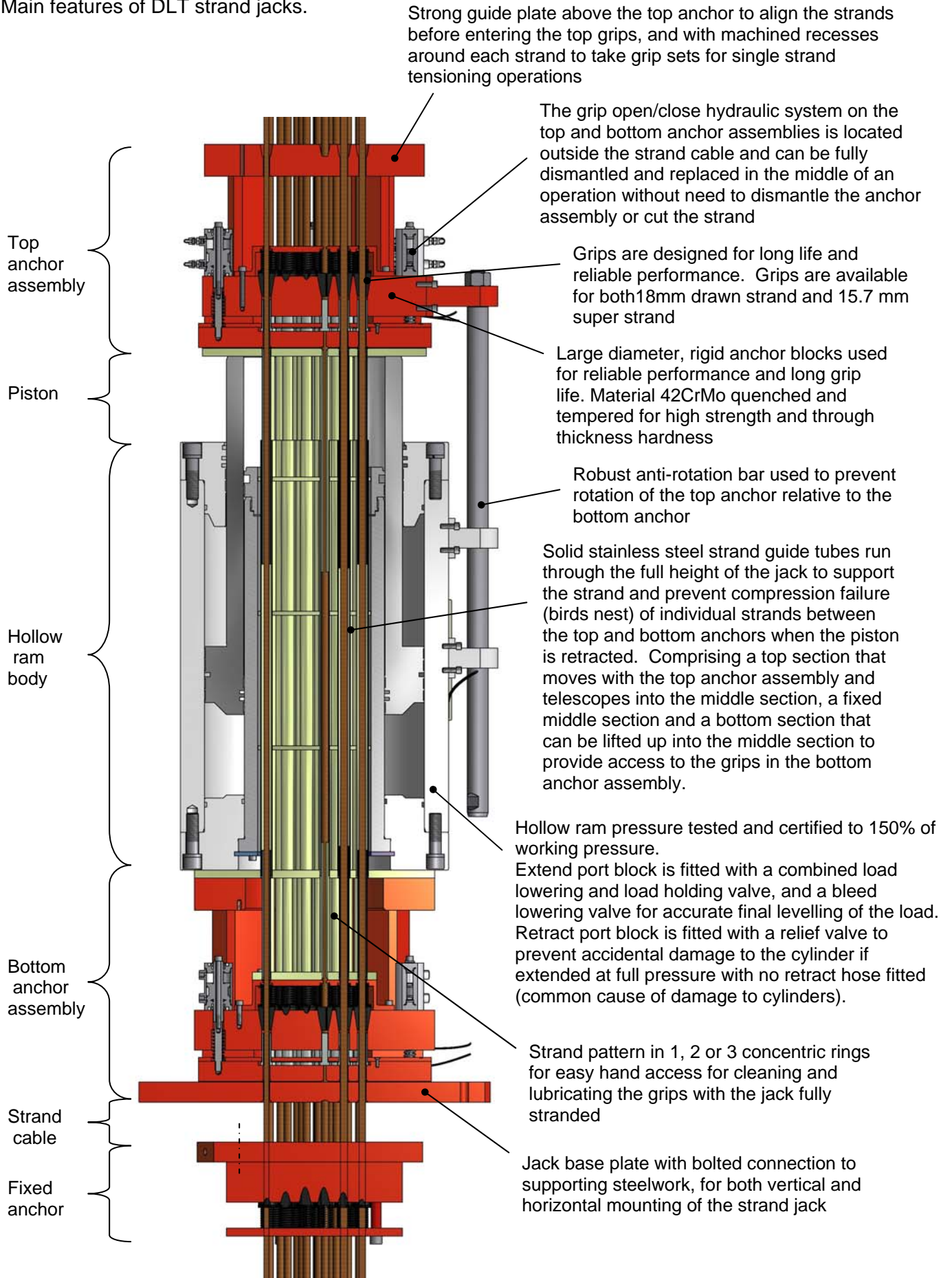
The main features of all our strand jacks are as follows, and illustrated on the next page:

- Safe working load of the jacks has been set at 40% of the minimum breaking load of the strand. (i.e. factor of safety = 2.5)
- Designed for use with both 18mm and 15.7mm diameter strands.
- Telescopic strand guide tubes through the full height of the strand jack to prevent buckling and 'birds nesting' of the strands inside of the jack. Made from solid stainless steel for long life.
- Strand patterns used and the arrangement of top and bottom anchors have been designed for ease of access to service the grips. All grips can be fully serviced in the middle of a lift with the jack fully stranded.
- Main cylinder pressure tested and certified to 150% of working pressure
- Complete strand jack load tested and certified to 125% of safe working load
- Double acting mini-jacks used for opening/closing the grips in the top and bottom anchors, which can be fully replaced in the middle of a lift if necessary without dismantling the strand anchors or cutting the strand.
- Pilot operated over centre valve fitted to the extension port block for controlled and synchronised load lowering.
- Load holding valve fitted to the extension port block for safe holding of the load in the event of a hose burst.
- Pressure compensated bleed valve fitted to the extension port block for very slow final lowering for precise alignment of the load and smooth transfer of load to supports.
- During a lifting operation the strand jack can be fully dismantled for repair with the load held in the bottom anchor
- Fitted with quick release hose couplings
- Corrosion protection to all exposed and running surfaces for long life and suitable for use in a marine environment
- Single strand tensioning plate fitted to the top of the jack.

Project specific steel fabrications are required to support the strand jack and to connect to the fixed anchor to the lifted load. Please see the project photographs on our web site for many examples of the options available. We are able to offer a full design and supply service for these items.



Main features of DLT strand jacks.



The strand is delivered to order in coils of up to 3.2 tonnes (1730m) and is placed in a strand dispenser on site for pulling and cutting to length as shown below:



For ease of handling and cleanliness of the strand we recommend that wherever possible the jack and fixed anchor are stranded at ground level and lifted in a single jack carriage assembly as shown below. We are able to provide a full design and supply service for this type of jack carriage to suit the jack size, strand length and support conditions.





DL-S15B strand jack

DO NOT SCALE

VIEW A (1:10)

1850 CLOSED LENGTH

500 STROKE

VIEW A (1:5)

220x170x25 THK BASE PLATE TO JACK WITH 4 No. Ø18 HOLES FOR M16 GRADE 8.8 FIXING BOLTS

B-B (1:5)

Ø70

140

DL-S15B STRAND JACK

DL-S15B FIXED ANCHOR (1:5)

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NOTES	
SPECIFICATION	
SAFE WORKING LOAD	15.4 METRIC TONNES
WORKING PRESSURE	190 BAR
JACK TEST LOAD (1.25xSWL)	19.3 METRIC TONNES
MAIN CYLINDER TEST PRESSURE ON EXTEND AND RETRACT (1.5xWORKING PRESSURE)	285 BAR
CLOSED LENGTH	1850 mm
STROKE	500 mm
OPERATING TEMP	-20 to +40 °C
MAX FULLY EQUIPPED JACK WEIGHT	145 kg
FIXED ANCHOR WEIGHT	3 kg
No. OF 18mm STRANDS	1
STRAND CABLE O.D.	18 mm

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DL-S15B STRAND JACK

Project: DL-S15B STRAND JACK

Drawing Title: STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT

Design Eng:	SAB	Checked Eng:	TBB
Drawing:	TJB	Project Eng:	SAB
INFORMATION			
Scale:	AS SHOWN		
Original Drawing size:	A3		
Drawing No:	DL-S015B-010		
Rev:	A		

DL-S46 strand jack

DO NOT SCALE

VIEW A (1 : 10)

SECTION B-B (1 : 10)

VIEW C (1 : 10)

FRONT ELEVATION (1 : 10)

DL-S46 STRAND JACK

DL-S46 FIXED ANCHOR

FRONT ELEVATION (1 : 10)

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NOTES	SPECIFICATION
SAFE WORKING LOAD	46 METRIC TONNES
WORKING PRESSURE	150 BAR
JACK TEST LOAD (1.25xSWL)	58 METRIC TONNES
MAIN CYLINDER TEST PRESSURE ON EXTEND/RETRACT (1.5xWORKING PRESSURE)	225 BAR
CLOSED LENGTH	1729 mm
STROKE	900 mm
OPERATING TEMP	-20 to +40° C
MAX FULLY EQUIPPED JACK WEIGHT	680 kg
FIXED ANCHOR WEIGHT	25 kg
No. OF 18mm STRANDS	3
STRAND CABLE O. D.	74 mm

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Project: DL-S46 STRAND JACK
 Drawing Title: STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT
 Issue No: 01
 Date: 22/07/2015
 Drawn By: JDB
 Checked By: JDB
 Approved By: JDB
 Information: INFORMATION
 Scale: AS SHOWN
 Drawing Code: DL-S046-010
 Drawing No: DL-S046-010
 Rev: A

DL-S108 strand jack

DO NOT SCALE

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SPECIFICATION

SAFE WORKING LOAD 108 METRIC TONNES

WORKING PRESSURE 281 BAR

JACK TEST LOAD (1.25xSWL) 135 METRIC TONNES

MAIN CYLINDER TEST PRESSURE 422 BAR

EXTENSIBLE JACK (1.5xWORKING PRESSURE)

CLOSED LENGTH 1796 mm

STROKE 500 mm

OPERATING TEMP -20 to +40°C

MAX FULLY EQUIPPED JACK WEIGHT 890 kg

FIXED ANCHOR WEIGHT 40 kg

No. OF 18mm STRANDS 7

STRAND CABLE O.D. 114 mm

DL-S108 STRAND JACK

DL-S108 FIXED ANCHOR

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Project: DL-S108 STRAND JACK

Drawn by: The STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT

DRAWN	CHECKED	DATE
AS SHOWN	AS SHOWN	2017
BY: [Signature]	BY: [Signature]	2017

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DL-S108-010

A



DL-S185 strand jack

DO NOT SCALE

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SPECIFICATION	
SAFE WORKING LOAD	185 METRIC TONNES
WORKING PRESSURE	292 BAR
JACK TEST LOAD (1.25xSWL)	231 METRIC TONNES
MAIN CYLINDER TEST PRESSURE ON EXTEND/RETRACT (1.5xWORKING PRESSURE)	438 BAR
CLOSED LENGTH	1895 mm
STROKE	500 mm
OPERATING TEMP	-20 to +40 °C
MAX FULLY EQUIPPED JACK WEIGHT	1450 kg
FIXED ANCHOR WEIGHT	80 kg
No. OF 18mm STRANDS	12
STRAND CABLE O.D.	166 mm

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Project: DL-S185 STRAND JACK

Drawing Title: STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT

Scale	Drawn By	Checked By	Drawn Date	Checked Date
AS SHOWN				

Information:

Copyright Drawing Size: A3
 Drawing No: DL-S185-010
 Rev: A

DL-S294 strand jack

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NOTES

SPECIFICATION

SAFE WORKING LOAD 294 METRIC TONNES

WORKING PRESSURE 281 BAR

JACK TEST LOAD (1.25xSWL) 368 METRIC TONNES

MAIN CYLINDER TEST PRESSURE ON EXTEND/RETRACT (1.5xWORKING PRESSURE) 422 BAR

CLOSED LENGTH 1949 mm

STROKE 500 mm

OPERATING TEMP -20 to +40°C

MAX FULLY EQUIPPED JACK WEIGHT 2280 kg

FIXED ANCHOR WEIGHT 115 kg

No. OF 18mm STRANDS 19

STRAND CABLE O.D. 210 mm

DL-S294 STRAND JACK

Project: DL-S294 STRAND JACK

Drawing Title: STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT

Drawn By: ZZZ
Checked By: ZZZ
Drawing No: ZZZ
Page No: ZZZ

Scale: AS SHOWN

Information: INFORMATION

Original Drawing Size: A5

DL-S294-010

Rev: A

DO NOT SCALE

SECTION B-B (1:10)

500x50x40 THK BASE PLATE WITH 4 No Ø28 HOLES FOR M24 GRADE 8.8 FIXING BOLTS

STRAND PATTERN
19 No STRANDS TOTAL
12 No ON Ø192 PCD
6 No ON Ø96 PCD
1 No CENTRAL

VIEW A (1:10)

OVERALL LIFTING BRACKETS

TOP ANCHOR ASSEMBLY

STROKE SENSOR (OPTIONAL)

STAND PATTERN
19 No STRANDS TOTAL
12 No ON Ø192 PCD
6 No ON Ø96 PCD
1 No CENTRAL

410x410x40 THK BASE PLATE WITH 4 No Ø28 HOLES FOR M24 GRADE 8.8 FIXING BOLTS

STRAND PATTERN
19 No STRANDS TOTAL
12 No ON Ø192 PCD
6 No ON Ø96 PCD
1 No CENTRAL

VIEW C (1:10)

VIEW C

ELEVATION (1:10)

DL-S294 FIXED ANCHOR

DL-S294 STRAND JACK

Labels: LIFTING BRACKETS, DL-40 CONTROL NODE WITHIN A PROTECTIVE BOX (OPTIONAL), MAIN CYLINDER, ANTI-ROTATION GUIDE, BOTTOM ANCHOR ASSEMBLY

Dimensions: 732, 275, 275, 240, 240, 275, 275, 205, 170, 205, 170, 205, 170, 213, 80, 197, 40, 500 STROKE, 1949 CLOSED LENGTH, 40



DL-S418 strand jack

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NOTES	
SPECIFICATION	
SAFE WORKING LOAD	418 METRIC TONNES
WORKING PRESSURE	290 BAR
JACK TEST LOAD (1.25xSWL)	523 METRIC TONNES
MAIN CYLINDER TEST PRESSURE ON EXTEND/RETRACT (1.5xWORKING PRESSURE)	435 BAR
CLOSED LENGTH	2080 mm
STROKE	500 mm
OPERATING TEMP	-20°C TO +40°C
MAX FULLY EQUIPPED JACK WEIGHT	3220 kg
FIXED ANCHOR WEIGHT	215 kg
No. OF 18mm STRANDS	27
STRAND CABLE O.D.	258 mm

DL

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Project: DL-S418 STRAND JACK

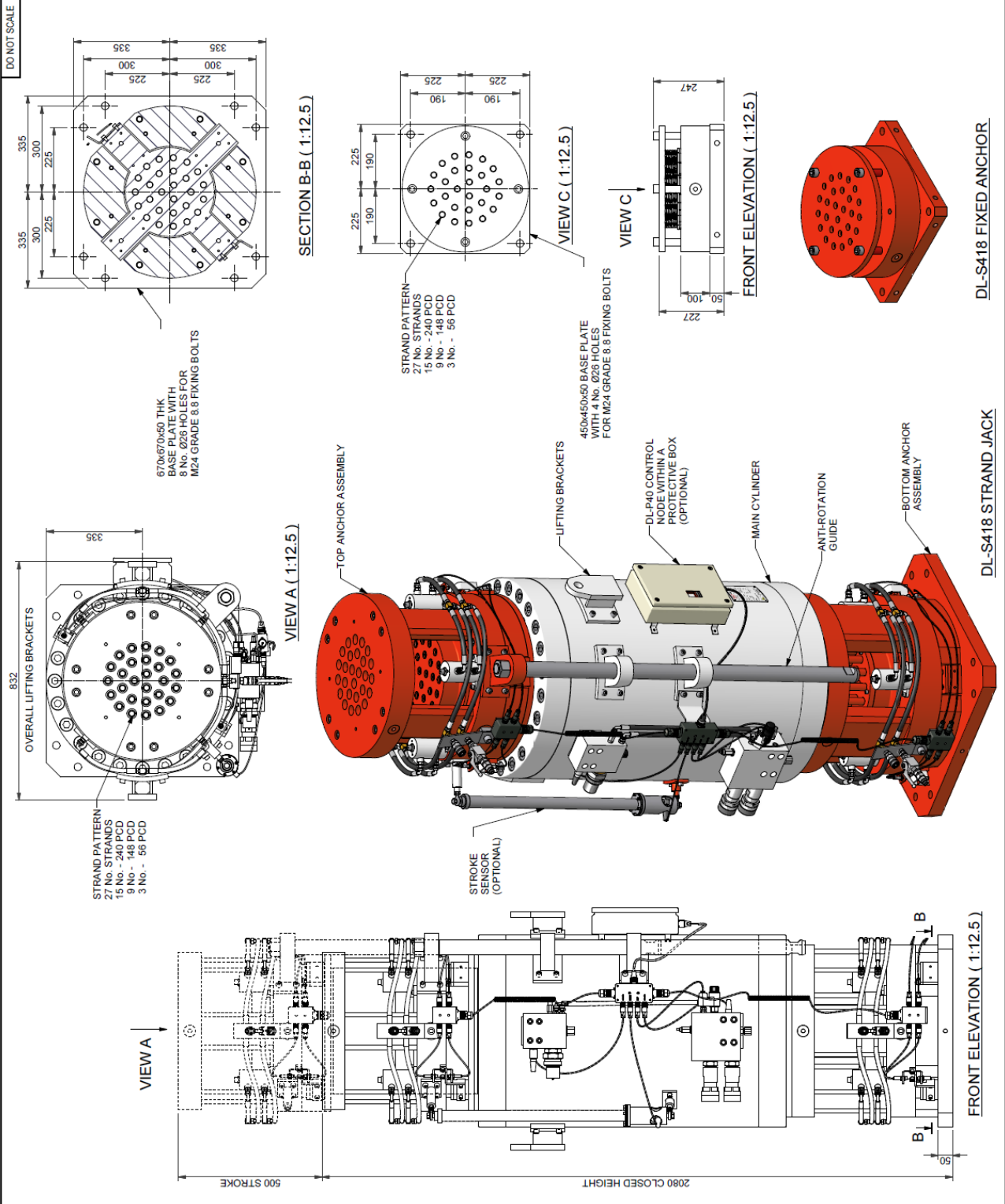
Drawing Title: STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT

SCALE	AS SHOWN
DATE	05/08/2018
BY	DL
CHECKED BY	DL
APPROVED BY	DL

Information

Drawing No: DL-S418-010

Rev: A



DL-S588 strand jack

DO NOT SCALE

DL-S588 STRAND JACK **DL-S588 FIXED ANCHOR**

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DL-S697 strand jack

DO NOT SCALE

SECTION B-B (1:15)

VIEW A (1:15)

VIEW C (1:15)

FRONT ELEVATION (1:15)

DL-S697 STRAND JACK

DL-S697 FIXED ANCHOR

DL-S697 STRAND JACK

STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT

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<p>Project: DL-S697 STRAND JACK</p>		
<p>Drawing Title: STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT</p>		
<p>Scale: 1:15</p>		
<p>Revision: A</p>		

DL-S836 strand jack

DO NOT SCALE

SECTION B-B (1:15)

VIEW A (1:15)

VIEW C (1:15)

VIEW B (1:15)

FRONT ELEVATION (1:15)

FRONT ELEVATION (1:15)

DL-S836 STRAND JACK

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SPECIFICATION	VALUES
SAFE WORKING LOAD	836 METRIC TONNES
WORKING PRESSURE	292 BAR
JACK TEST LOAD (1.25xSWL)	1045 METRIC TONNES
MAIN CYLINDER TEST PRESSURE ON EXTENSION JOINT (1.5xWORKING PRESSURE)	438 BAR
CLOSED LENGTH	2200 mm
STROKE	500 mm
OPERATING TEMPERATURE	-20 to +40° C
MAX FULLY EQUIPPED JACK WEIGHT	6680 kg
FIXED ANCHOR WEIGHT	350 kg
No. OF 18mm STRANDS	54
STRAND CABLE O.D.	402 mm

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Project: DL-S836 STRAND JACK	
Drawing Title: STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT	
	INFORMATION
Drawing No.: DL-S836-010 Drawing Rev.: A	



DL-S1022 strand jack

DO NOT SCALE

SECTION B-B (1 : 15)

870x870x50 THK
BASE PLATE WITH
8 No. Ø25 HOLES FOR
M24 GRADE 8.8
FIXING BOLTS

VIEW C (1 : 15)

STRAND PATTERN
66 No. STRANDS TOTAL
28 No. - 448 PCD
22 No. - 352 PCD
16 No. - 256 PCD

620x620x50 BASE PLATE
WITH 4 No. Ø25 HOLES
FOR M24 GRADE 8.8 BOLTS

FRONT ELEVATION (1 : 15)

DL-S1022 STRAND JACK

DL-S1022 FIXED ANCHOR

DL-S1022 STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT

Labels: TOP ANCHOR ASSEMBLY, MAIN CYLINDER, LIFTING BRACKETS, ANTI-ROTATION GUIDE, BOTTOM ANCHOR ASSEMBLY, STROKE ENCODER (OPTIONAL), DL-P40 CONTROL BOX WITHIN A PROTECTIVE BOX (OPTIONAL).

FRONT ELEVATION (1 : 15)

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NOTES	
SPECIFICATION	1022 METRIC TONNES
SAFE WORKING LOAD	300 BAR
WORKING PRESSURE	1278 METRIC TONNES
JACK TEST LOAD (1.25xSWL)	450 BAR
MAIN CYLINDER TEST PRESSURE ON EXTEND/RETRACT (1.5xWORKING PRESSURE)	2291 mm
CLOSED LENGTH	500 mm
STROKE	-20 to +40° C
OPERATING TEMP	8570 kg
MAX FULLY EQUIPPED JACK WEIGHT	510 kg
FIXED ANCHOR WEIGHT	66
No. OF 18mm STRANDS	486 mm
STRAND CABLE O.D.	

Project: DL-S1022 STRAND JACK

Drawing Title: STRAND JACK AND FIXED ANCHOR GENERAL ARRANGEMENT

INFORMATION	
Drawn By: JWB	Checked By: ZGB
Drawn Date: 2017	Checked Date: 2017
Drawn No: AS SHOWN	Checked No: 3003
Drawn Scale: AS SHOWN	Checked Scale: 3003
Drawn By: JWB	Checked By: ZGB
Drawn Date: 2017	Checked Date: 2017
Drawn No: AS SHOWN	Checked No: 3003
Drawn Scale: AS SHOWN	Checked Scale: 3003

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DL-S1022-010

Rev: A



The main features of our standard power packs are as follows:

- Pressure tested and certified to 125% of working pressure
- High quality piston or ball check pumps used for jack extend/retract circuit for maximum reliability and minimum variation in flow with changing jack loads.
- The secondary hydraulic circuit for opening and closing of the jack grips is designed to allow the grips to close under the action of the grip springs in the event that there is a loss of hydraulic oil pressure due to component failure or power failure. This is an important safety feature.
- All electrical components weatherproof to IP 55 or better
- Suitable for use with both mineral or biodegradable hydraulic oils
- Visual oil level & temperature indicator and automatic shut down system in the event of low oil level
- Pressure gauges to main extend/retract p-line and mini-jack p-line.
- Separate pressure relief valves for cylinder extend, cylinder retract and mini-jack open/close.
- All our power packs come with a fixed control panel for manual operation of the connected jacks during set up, and a local/remote switch for selecting between this control panel and the DL-P40 and DL-M central control systems.
- All our power packs are compatible with both our DL-M and DL-P control systems for central monitoring and control of all jacks from a single point.
- Power pack mounted in steel crash frame with fork lift truck points and lifting eyes.
- Components arranged for easy access for inspection and servicing.
- Overall size to suit transport in standard shipping containers.
- Fitted with quick release hose couplings.
- All exposed surfaces are corrosion protected for long life and are suitable for use in a marine environment.



DL-L120F/2/300/D diesel powered hydraulic power packs during pressure and function testing

DL-P40 computer control system

The DL-P40 computer control systems are written and developed in-house by DLT using our own software and hardware engineers working in consultation with our own operators. It can be used to control all types of hydraulic jacking systems including strand jacks, climbing jacks, gripper jacks and synchronous solid ram jacking systems. The system offers the simplest possible operating screen for increased safety, and uses the latest CANbus networking system for robust communication between the control computer and the CAN nodes located on the power packs and on the jacks. The complete system has been tested and certified to all relevant European Electro-Magnetic Conformance (EMC) standards, an important consideration when used in a site environment.

The DL-P40 uses programmable CAN nodes located on the strand jacks and power packs for intelligent sensing and control functions, and a central operating computer to manage all the tasks. The system can monitor and control any number of jacks, although the current interface is configured for up to 120 strand jacks. The full version of the computer software is free to load on any computer and has an inbuilt simulation mode that allows the operator to set up any combination of strand jacks and power packs and simulate a full lift taking place.

The screen that the operator will see for a 40 jack lift is as shown below. An auxiliary screen is used to show jacks from 41 to 120.

Manual Mode

Top Anchor: 125%, 100%, 75%, 50%, 25%, 0%
Base Anchor: 125%, 100%, 75%, 50%, 25%, 0%

Total	J200	J201	J202	J203	J204	J205	J206	J207	J208	J209	J210	J211	J212	J213	J214	J215	J216	J217	J218	J219	Jack Load (3201MT)	Monitor (MT)	Stroke (mm)	Lift (mm)
6402	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
6402	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
0	469	467	471	469	469	471	468	470	469	468	470	467	468	470	468	468	469	471	469	468	468	468	468	468
745	745	743	747	745	744	746	744	746	745	743	744	742	743	745	744	746	743	747	743	746	746	746	746	746

J220	J221	J222	J223	J224	J225	J226	J227	J228	J229	J230	J231	J232	J233	J234	J235	J236	J237	J238	J239	Jack Load (3201MT)	Monitor (MT)	Stroke (mm)	Lift (mm)
160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
467	468	470	469	467	468	469	469	471	468	467	470	466	470	470	470	468	466	468	470	468	468	470	468
745	744	744	746	744	746	745	745	748	745	742	746	742	745	746	745	745	743	744	746	746	746	746	746

Operating Mode: Auto Lift, Auto Lower, Manual

Jack Details: Jack Name: J200, Jack CAN I.D.: 200, Jack Serial No: j01, Jack Type: S111

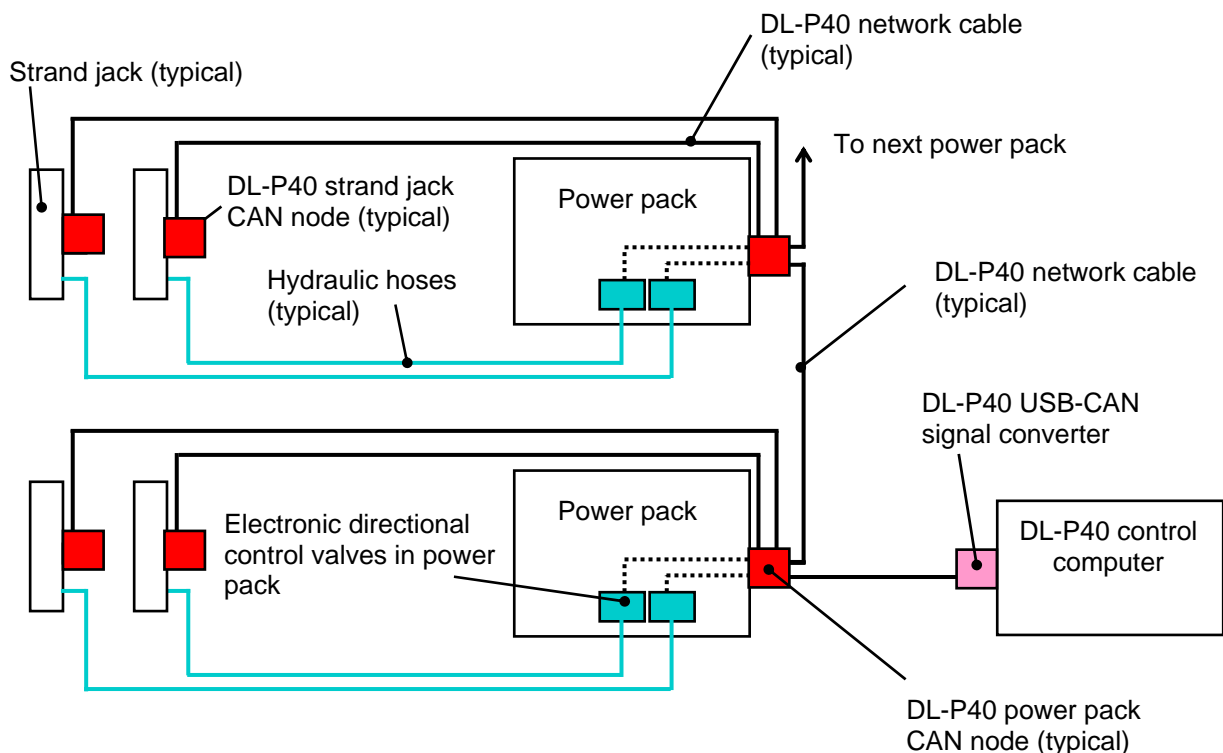
Stroke(mm): 750.0, Top dead Zone: 20.0, Bottom dead Zone: 20.0, Extend overrun(mm): 2.0

SWL(MT): 185.0, SWL pressure(bar): 292.0, Area ratio: 1.690, Retract overrun(mm): 4.0

20 mA pressure(Bar): 400.0, Zero Pressure(mA): 4.00, Scrn full extended(mm): 1972.0, Scrn full retracted(mm): 58.0

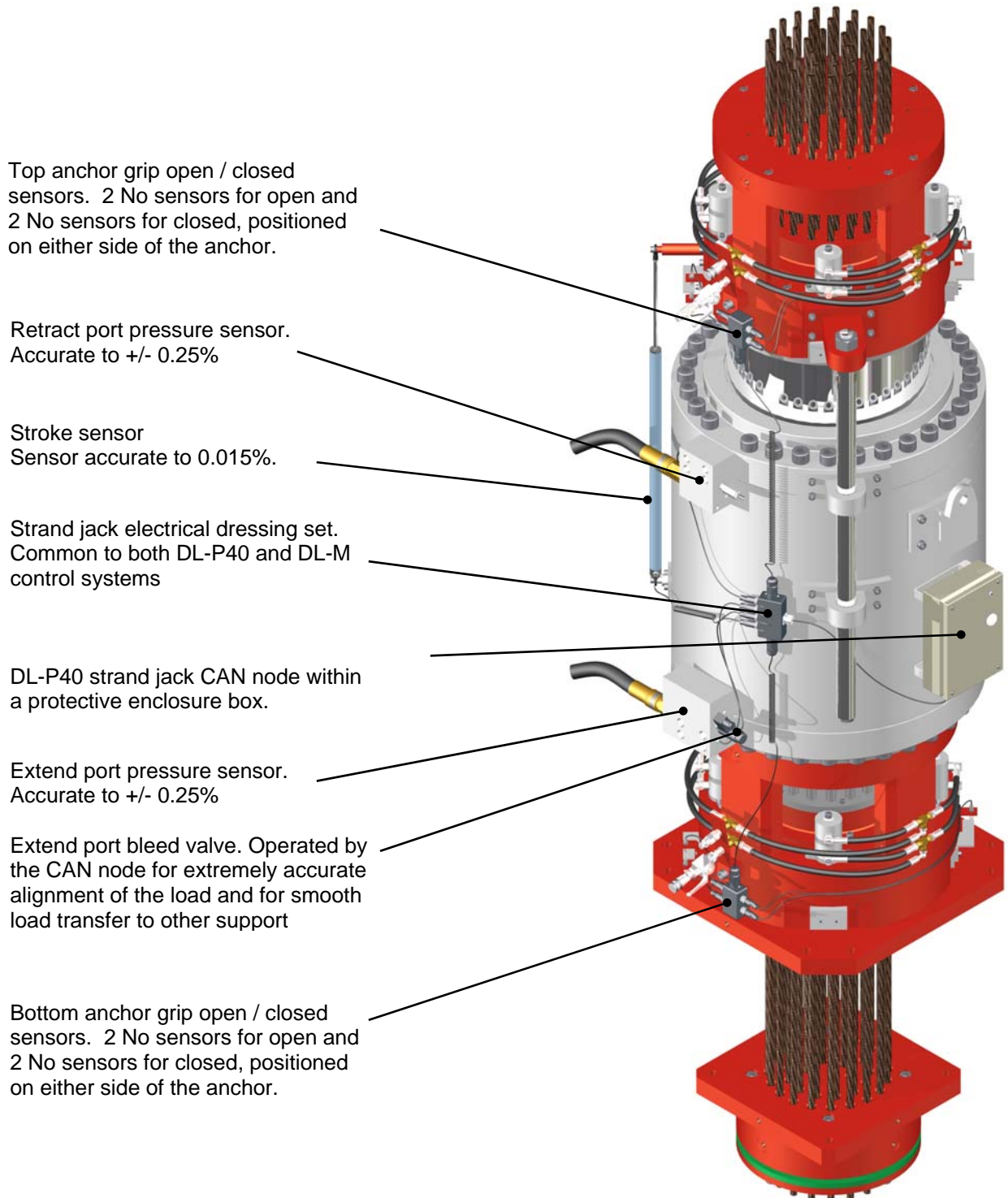
The operator can select any combination of jacks to be operated and has three operating modes – manual, auto-lift and auto-lower. In all 3 modes the computer can be set to automatically synchronise the strokes of the jacks to within a user defined range. Synchronising strokes in this way helps to maintain an even load distribution between the jacks during a lift. The operator can also set an expected load for each jack, which can be different for each jack, and can set a maximum % of this load as the overload limit for the operation. The system will automatically stop all jacks if any of the jacks reaches its overload limit. The screen displays all jack loads graphically as % of pre-set load (expected load), so if all the jacks are seeing their expected load then the operator will see all the jack load indicators on the 100% line. This method of graphically displaying the loads makes it very easy for the operator to see if a jack is not taking its expected load. After the strand jacks have lifted the load a small distance and the actual loads in each jack are shown on the screen, the operator can press the 'Set Load' button to read all these loads into the computer, and he can then ask the computer to graphically show the jack loads as a % of these Set loads instead of the expected loads.

The schematic layout of the DL-P40 system hardware is as follows :



There are two types of DL-P40 CAN node, the first is for fitting to the power packs and the second is for fitting to the strand jacks. Both types of CAN node are intelligent and are pre-programmed with the characteristics of the equipment they are fitted to. Once the system is fully connected the control computer interrogates the network and automatically detects the CAN nodes, allowing it to understand what power packs and jack are connected, and which jacks are connected to which power packs. This information is then displayed in a setting screen at the control computer where the operator can add additional information such as the expected load for each jack. The layout of the system and the operator defined settings can all be saved in a project file on the control computer, which can be re-loaded at any time to avoid the need to re-input this information.

Each strand jack and climbing jack has a number of sensors fitted to detect pressure, piston extension and grip open or closed states. All sensors, wiring and CAN nodes are weatherproof to IP 55 or better. The arrangement of the DL-P40 sensor system on a strand jack is shown below (climbing jacks have the same set of sensors) :



The DL-P40 computer calculates the load in the strand jack by multiplying the extend port pressure by the extend side area to get the extend side load, and then deducts the retract port pressure multiplied by the retract side area to remove inaccuracies due to any back pressure in the system on the retract side of the circuit.



In summary, the main features of the DL-P40 computer control system are as follows:

- Control of up to 120 No. jacks from a single control computer, with up to 40 jacks shown on the Main Screen and a further 80 jacks shown on the optional Jacks 41-120 Screen.
- Control any type of hydraulic ram, either with or without a gripping system fitted. Eg strand jacks, climbing jacks, gripper jacks, compression rams, tension rams.
- Control all types of hydraulic power packs, using electric motors or diesel engines, and having fixed flow or variable flow.
- CAN network for reliable communication between the control computer and the power packs and the jacks.
- Plug and play system using intelligent CAN nodes on all the power packs and jack. Connect the jacks and power pack CAN nodes together with the data cables supplied and the Control Computer will automatically detect and understand all the equipment being used. This greatly reduces set up time.
- User friendly interface, designed in consultation with our own operators to give a clear presentation of all essential data during a jacking operation.
- Project specific set-up information can be saved in project files and reloaded at any time, so that this data only needs to be entered once.
- Can accept a wide range of sensors fitted to the jacks and power packs for continuous display and monitoring of jack load, jack stroke, gripping system open/closed state, oil temperature, oil level and motor state.
- Automatic stroke synchronisation in both automatic lift/lower modes and manual mode
- Simple and accurate method for quickly calibrating all stroke encoders
- Comprehensive log file of all jack loads, operator commands, messages and events is stored on the control computer for later analysis. The operator may comment to the log file at any time to explain what is happening.
- Remote start and stop of all power pack motors from the control computer
- Control Computer can be running Windows XP, Vista or Windows 7 and communicates with the CAN nodes via a USB to CAN link.
- Many inbuilt safety features to prevent unsafe operation of the jacking system
- Tested and certified to European Electro Magnetic Conformance standards for reliable operation in all site conditions.
- Simulation mode for training and demonstration purposes, which can be set up by the user to run any combination of jacks and power packs.



Radiated Emission Test Set-up Back View

DL-M control system

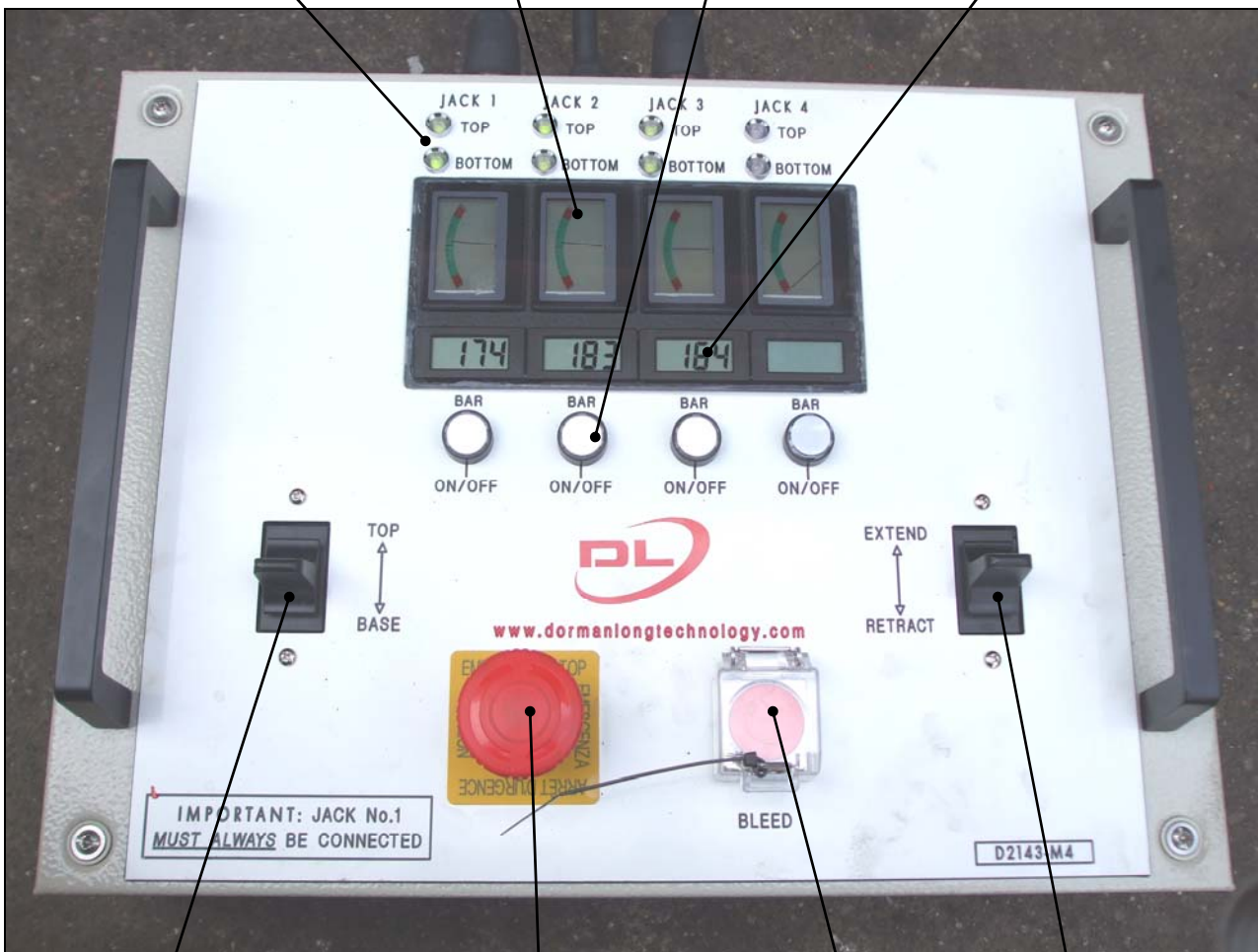
DL-M control systems can be used by a single operator to monitor and control up to 12 jacks and are operated from a control box as shown below (DL-M4 shown). The DL-M system has none of the automation of the DL-P40 computer control system. However, it offers a practical low cost alternative to the DL-P40 and most components of the DL-M system are upgradable at a later date to the DL-P40 system. The DL-M The control box is weatherproof to IP 55 and is suitable for use outside in all weathers and in temperatures ranging from -10 to +50 deg C.

Top and bottom grip open / closed lights. Green for closed, red for open

Analogue display of jack extend port pressure

Jack selector on/off button

Digital display of jack load or pressure (measured at the jack extend port)



Joystick for opening the top or bottom grips with spring return to centre position. All grips closed when the joy stick is in the central position

Emergency stop button

Bleed lowering button for fine alignment of the load or smooth load transfer to supports

Joystick for extending or retracting the main cylinder with spring return to the centre position

The wiring and junction boxes on the jacks and power packs are the same for both the DL-P40 and DL-M systems, allowing the DL-M system to be used as a back up to the DL-P40 computer control system with a very quick changeover form one system to the other.



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Our jacking systems are under continuous development in response to feedback from our customers and our own experience in using this equipment. The information contained in the brochure is subject to change without notice.