DAWSON
CONSTRUCTION PLANT LTD

GROUND RELEASE SHACKLE

INNOVATIVE PILING EQUIPMENT

HYDRAULIC PILING HAMMERS

EXCAVATOR MOUNTED VIBRATORS

EXCAVATOR MOUNTED DRILLS

QUIET, VIBRATIONLESS PUSH-PULL PILING

PILE EXTRACTION

SHEET PILE GUIDE FRAMES

SHEET PILE CAPPING SYSTEMS

CFA CLEANERS

PILE POINTS & SPLICERS

HANDLING / LIFTING

EURO GROUND RELEASE SHACKLE OPERATORS INSTRUCTIONS & SPARE PARTS LIST

www.dcpuk.com

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Under separate cover:

- Individual Test Certificate & Thorough Examination if required.

- E.C. Declaration of Conformity

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INTRODUCTION

This robust pile lifting shackle was contractor designed and developed over many years of site use and abuse. The use of these shackles compliments the “Feet on the Ground” approach to piling. When used in conjunction with the Sheet Pile Threader, there is no need for site operatives to go above the safety of top frame level for interlocking sheet piles or releasing the lifting shackles. The shackles are suitable for lifting all steel piles up to 28mm thick and within the safe working load of the shackle. The shackle is stiffened to resist spreading of the forks when lifting at 90° to the axis of the pile. (See “Safety Check List”). When lifting sheet piles in pairs or individual piles weighing more than the Safe Working Load of the shackle, it is necessary to use multiple shackles in order to keep within the safe working load. Pairs of shackles can be supplied mounted on a two legged steel wire rope sling. The advantage being that the standard pair of shackles with lifting sling can be fitted to any pair of Larssen ‘U’ piles, Frodingham ‘Z’ piles, pipe or box piles. No additional parts or change of components is necessary. The ring at the top of the sling can be hooked directly onto a standard crane hook block, ‘D’ shackle or fork anchor. Shackles can also be fitted onto a solid steel cross head according to customers requirements.

FEATURES

. Robust High Strength cast steel body. High alloy steel plunger.
. Plunger mechanism concealed for maximum protection.
. Plunger mechanism easily detachable for maintenance.
. Heavy web stiffening to withstand side left (i.e. 90° to the axis) imposed when lifting piles from a stack. (See “Safety Check List” for correct working practice).
. Lifting ring at top of shackle to enable lifting from a variety of angles.
. Proof loading to twice the safe working load.
. Indicator bar to give clear visual indication that plunger has engaged pile lifting hole completely.
. Shackle throat depth available in two sizes: 150mm (6”) or 250mm (10”) to suit all usual lifting hole positions.
. Quick coupling and release of shackle from piles ensuring maximum productivity.
. ‘Safety ring’ to protect against accidental plunger release caused by poor working practices.

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METHOD OF OPERATION

1. Tie a length of soft rope to the pull ring on the pull wire. The rope should be 1 metre (3 feet) longer than the pile length. Do not use a continuous loop as this will become snagged.

2. Before positioning the lifting shackles, it is necessary to retract the plunger. Pull the pull wire until the trip mechanism holds the plunger in its retracted position.

3. Separate the sheet piles on the stack to enable the body of shackle to be slid over the pile head. With the plunger tube assembly uppermost, slide the fork of the shackle over the pile head with the pile in the throat of the shackle.

4. With the plunger over the pile lifting hole, firmly tap the indicator bar end. If the plunger does not locate directly through the hole, move the shackle body until the plunger goes through the pile hole and into the shackle body on the underside. The indicator bar should be flush with the plunger tube assembly.

5. Repeat this for both piles when lifting pairs of sheets.

6. Install the safety ring over the plunger tube assembly as shown in the installation diagram.

7. With the plunger properly located, the safety ring engaged, the piles can then be lifted into position for threading. It is advisable to tie the shackle ropes to the sheet pile threader to prevent them being trapped, snagged or getting blown out of reach in strong winds.

8. To release the shackles after threading is complete, the safety ring must first be unhitched by ‘flicking’ the release rope, then simply pull on the release rope. If there is a tendency to jam, then take the weight of the shackle on the crane and pull again.

9. Unauthorised alterations invalidate the test certificate.

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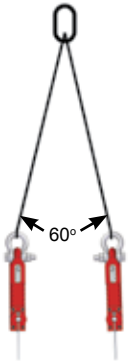
LIFTING PILES CORRECTLY

LIFTING PAIRS OF PILES
When lifting sheet piles in pairs it is necessary to use a pair of shackles.

The ring at the top of the sling can be hooked directly onto a standard crane hook block, D shackle or fork anchor. The sling also enables the shackles to be turned to fit opposite faces of box or tube piles using the standard sling and shackles.

Shackles can also be fitted onto a solid steel cross head according to customers requirments.



Downrate in accordance with national codes

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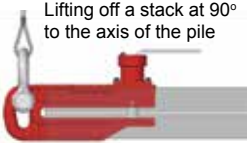
SAFE
Axial loading

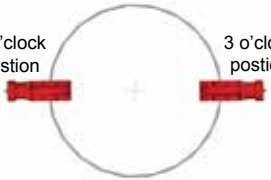
SAFE
Lifting off a stack at 90° to the axis of the pile



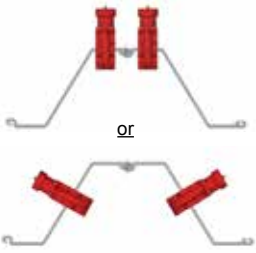
TUBE PILE

9 o'clock postion

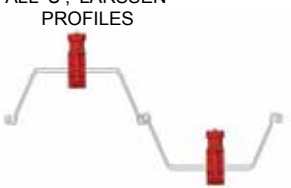
3 o'clock postion



ALL 'Z' PROFILES



ALL 'U', 'LARSSEN' PROFILES



'H' PILE

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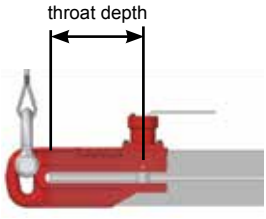
SAFETY CHECK LIST

1) PRE-INSTALLATION CHECKS
Prior to installing a shackle onto any steelwork, check the following:-

a. Establish the weight of the lift involved and ensure a shackle with appropriate Safe Working Load is being used.

b. Ensure the lifting hole is at the correct distance from the top of the steelwork i.e. 150mm for a 150mm throat depth shackle, 250mm for a 250mm throat depth shackle or 300mm for a 300mm throat depth shackle.

* Incorrect hole placement in steelwork may cause shackle failure



c. The lifting hole should be neatly drilled or punched and of a suitable size to suit the plunger.

d. The Safe Working Load rating of any shackle is based on a purely tensile (axial) load. When lifting steelwork from horizontal to vertical or the reverse, remember that the shackle becomes de-rated by 50%

i.e. a 10 tonne S.W.L. Ratchet Shackle should only be loaded to 5 tonne at the start of a horizontal lift.

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2) Do not use the lifting shackles for pulling or extracting.

3) Ensure that the pin has gone through both sides of the shackle body - check indicator bar position prior to lifting.

4) Do not modify the lifting shackles or any part of the lifting apparatus. Keep the burning torch well clear!

5) Keep the plunger mechanism well lubricated.

6) Care should be taken to avoid the pull ropes getting snagged.

7) The angle between the two legs of the lifting strap, where applicable should not exceed 90°.

8) Ensure that all appropriate laws, bye-laws and regulations are complied with.

9) Always use the safety ring to prevent accidental release

- it only takes an extra second or two!

KEEP FINGERS OUT OF THE SHACKLE THROAT AT ALL TIMES. (GLOVES SHOULD BE WORN.)

DO NOT USE SHACKLE IN TEMPERATURES BELOW -15°C (5°F)
CONSULT MANUFACTURE FOR FURTHER INFORMATION ON LOW TEMPERATURE SOLUTIONS.

SHACKLES MUST NOT BE SUBJECTED TO EXCESS VIBRATION FROM PLANT EQUIPMENT.

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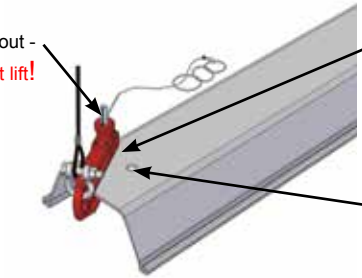
INSTALLATION DIAGRAM

FITTING SHACKLE TO 'U' SHEET PILE

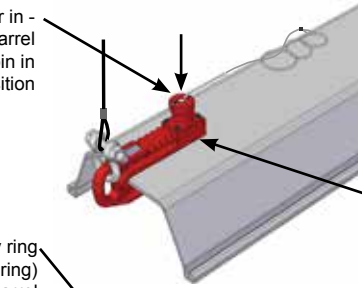
Indicator bar out -
Pin retracted - Do not lift!



Slide throat of shackle over top of sheet pile

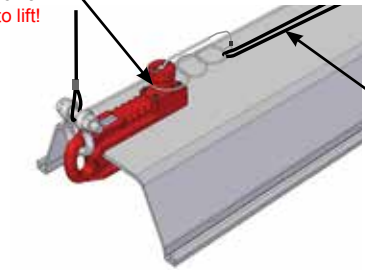
Hole position to suit diameter of appropriate shackle

Indicator bar in - flush with the barrel
Safety pin in engaged position



Align shackle pin with sheet pile lifting hole

Place safety ring (the largest diameter ring) over the assembly barrel
Ready to lift!



Release rope

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RELEASE DIAGRAM

FITTING SHACKLE TO 'U' SHEET PILE

Pile correctly positioned

Release rope

1. Whip the release rope away from the top of the pile

2. A firm pull on the release rope will retract the pin, the indicator bar will protude out

Ratchet is now ready for next lift

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TRAINING

Before allowing operators to use the Shackle, it is important to ensure they have received basic training in lifting and control of heavy loads.

It is strongly recommended that the following areas are covered:

1. Basic safety in lifting operations
2. Supervision during lifting operations
3. Detailed instruction on how the Euro Shackle operates
4. Safety Features of the Euro Shackle
5. Dangers and Mal-practices
6. Correct choice of Euro shackle for the job

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MAINTENANCE

The Shackle is manufactured from high quality material and assembled in a manner designed to offer long service with a minimum of maintenance.

In order to preserve the product in this state, it is necessary to ensure that it is not mis-used or used for purposes outside its recommended use and to carry out regular inspection and servicing.

The shackle body should be checked regularly for distortion arising from overload - if bent - bin.
The pin should be checked for smooth travel and light oiling applied at moving surfaces.

If the product does not operate perfectly, contact the manufacturer for advice, or return for immediate attention.

Each unit is issued with a test certificate.

If any parts of the shackle are replaced with non standard parts or in a non approved manner, the certificate is no longer valid.

Replacement of any load bearing components requires a re-test to twice safe working load.

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TECHNICAL SPEC.

STANDARD SHACKLES

Part No.

5983 - 4T EGRS 150 Throat General Assembly

5984 - 7.5T EGRS 150 Throat General Assembly

5985 - 10T EGRS 150 Throat General Assembly

5986 - 7.5T EGRS 250 Throat General Assembly

5987 - 10T EGRS 250 Throat General Assembly

GRS-017 ISSA - Optional Remote Release Detent Kit
5919-01A General Assembly

NEW

SPECIAL SHACKLES

LOW TEMPERATURE SHACKLE

5987A/AL - 10T EGRS 250 Throat General Assembly
Low Temperature -40C

WIDE THROAT SHACKLE

5990 - 10T EGRS 250 Throat General Assembly
Throat Width - 32.5mm

5991 - 5T EGRS 250 Throat General Assembly
Throat Width - 36mm

5992 - 10T EGRS 150 Throat General Assembly
Throat Width - 35mm

5993 - 7.5T EGRS 150 Throat General Assembly
Throat Width - 35mm

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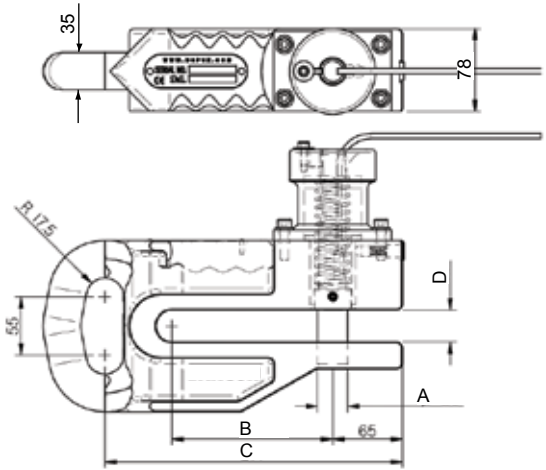
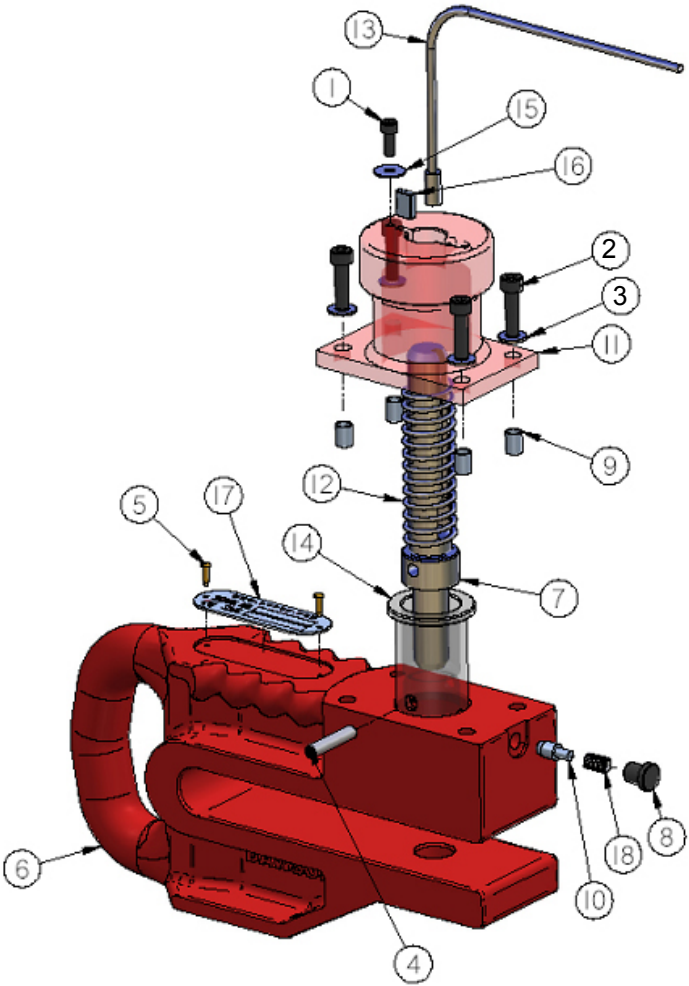


	DRAWING No.									
	5983	5984	5985	5986	5987	5987A/AL	5990	5991	5992	5993
TYPE (COLOUR)	STANDARD (RED)					LOW TEMP. (BLUE)	WIDE THROAT (YELLOW)			
WEIGHT KG	17.5	17.5	17.5	21.5	21.5	21.5	21.5	21.5	17.5	17.5
A	Ø22	Ø28	Ø35	Ø28	Ø35	Ø35	Ø35	Ø28	Ø35	Ø28
B	150	150	150	250	250	250	250	250	150	150
C	277	277	277	377	377	377	377	377	277	277
D	30	30	30	30	30	30	32.5	36	35	35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PARTS LIST

STANDARD SHACKLES

Item No.	Q'ty	Part Name	5983	5984	5985	5986	5987
1	1	Socket Head Cap Screw	0M06.016.02				
2	4	Socket Head Cap Screw	0M08-030-02				
3	4	Washer	0M08.000.20				
4	1	Coiled Spring Pin	0M08.040.36				
5	2	No6 x 1/2" Rivet	1-204-00-01				
6	1	EGRS Throat	5903	5904	5905	5906	5907
7	1	Plunger	5908	5909	5913	5909	5913
8	1	M12 X 1.5 Plug	5915				
9	4	Dowel Bushing	5916				
10	1	Detent Pin	5919				
11	1	Tube Assembly	5922A-B				
12	1	Compression Spring	5926				
13	1	Safety Pull Wire Assy	5930A				
14	1	Sleeve	5931				
15	1	M6 x Ø19 Washer	5936				
16	1	Guide Key	5937				
17	1	Shackle ID Plate	5938				
18	1	Compression Spring	6935				

SPECIAL SHACKLES

Item No.	Q'ty	Part Name	5987 A/AL	5990	5991	5992	5993
6	1	EGRS Throat	5907L	5907W	5906W	5905W	5904W
7	1	Plunger	5913L	5913	5909	5913	5909

GENERAL ASSEMBLY

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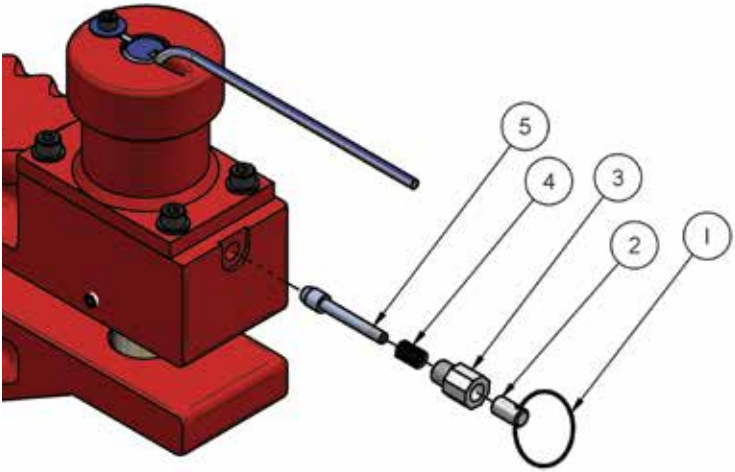
PARTS LIST



Ref. No	Qnt.	Part Name	Material	Dimension	Remark
5	1	Detent Pin			5919-01
4	1	Detent Spring			6935
3	1	Nut			5953
2	1	Cap			5952
1	1	Split Ring			0m38Splitring

OPTIONAL REMOTE RELEASE
DETENT KIT 5919-01A
GENERAL ASSEMBLY

DRAWING No. GRS-017 ISSA

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GROUND RELEASE SHACKLE

A GUIDE TO CHANGING THE PULL WIRE ON A DAWSON GROUND RELEASE SHACKLE

INNOVATIVE PILING EQUIPMENT

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EXCAVATOR MOUNTED VIBRATORS

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01

The Pull Wire may require changing if it is frayed, kinked or generally damaged.

02

First remove the guide key.
Unscrew the M6 cap head screw and washer.

03

The guide key can now be retracted.

04

Remove the plug from the underside of the shackle body. The detent pin can be left in the shackle body.

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05

Remove the 4 No. M8 cap head screws holding the tube assembly to the shackle body.

06

Carefully retract the assembly from the body as shown.

07

The sleeve is attached to the plunger via a coiled pin. This needs to be removed.
Hold the sleeve securely.

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08

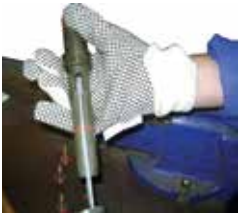
Drive the coiled pin out using a 5mm punch.
REMEMBER TO WEAR EYE PROTECTION!!!
With the sleeve removed the old Pull Wire can be extracted.

09

IMPORTANT
The new Pull Wire tail must be threaded through the largest ring to ensure correct orientation at final assembly.

10

Thread the tail of the new Pull Wire into position.



11

Locate tail end in plunger in the oval slot as shown.

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12

The sleeve can now be replaced and coiled pin hammered back in place. A new coiled pin may be required if the old one is damaged.
HINT: Ensure the coiled pin is flush on both sides of the sleeve, this will allow smooth operation in the shackle body.

13

The assembly can now be reattached to the shackle body. A small amount of force is required to push the assembly against the spring to the shackle body.

Tighten the 4 No. M8 cap heads.

14

The plug and guide key can now be reinserted and tightened into position. The guide key M6 cap head should have a light coating of Loctite 270 applied.

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15

Finally check correct operation of the mechanism.
Gloves should be worn for these operations!
First operate the Pull Wire to retract the plunger. This requires reasonable force. The plunger should remain in the retracted position.

16

A tap with a soft hammer should fire the pin forward.

17

The indicator bar (item just hit with the hammer) should be flush to the tube assembly as shown
– this is critical!
If in doubt, contact the manufacturer.
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NOTES

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GROUND RELEASE SHACKLE

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