

safety lifting equipment

# ERRRS

3.5t

5t

7.5t

10t

25t

40t



owners manual  
operators instructions  
spare parts list  
safety precautions  
maintenance

## euro ratchet release shackle

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Original Instructions  
Rev. 011



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CONSTRUCTION PLANT LTD

[www.dcpuk.com](http://www.dcpuk.com)

# preface

This manual is used to familiarise you with safety, assembly, operation, adjustment, troubleshooting, and maintenance. Read and follow the recommendations in this manual to ensure safe and efficient operation.

We want you to be completely satisfied with your new product. Feel free to contact your local authorized service dealer for help with service, replacement parts, or any other information you may require. If you need assistance in locating a dealer, visit our web site at [www.dcpuk.com](http://www.dcpuk.com) or call customer service at +44 (0) 1908 240300.

Whenever you contact your authorised service dealer, always have the model number and serial number of your product available. These numbers will help provide exact information about your specific product. You will find the model and serial numbers on an ID plate located on the product.

The descriptions and specifications in this manual are subject to change without notice. Dawson reserves the right to improve products. Some product improvements may have taken place after this manual was printed.





# EC Declaration of Conformity

EC Declaration of Conformity according to  
EC Machinery Directive 2006/42/EC of the 29<sup>th</sup> May 2006, Annex IIA.

We hereby declare that the machinery/equipment described below is designed and manufactured to comply with the Essential Health and Safety Requirements of the applicable EC Directive(s) and that the required conformity assessment procedures have been carried out. This declaration ceases to be valid if alterations are made to the machinery/equipment without agreement with Dawson Construction Plant Ltd.

**Category:** Lifting Equipment  
**Description:** Euro [GRS/RRS] Assembly [Throat/SWL]  
**Type:** [Part Number]  
**Serial number:** [Serial Number]

**Relevant Regulations:**  
2006/42/EC Machinery Directive

**Applied harmonised standards, in particular:**  
EN ISO 12100:2010 Safety of machinery

**Authorised representative for compiling the technical file:**  
D. A. Brown - contact details as per below.

**Signature for and on behalf  
of Dawson Construction  
Plant Limited:**

**Name:**

**Date:**

**Location:**

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A guide to changing the Pawl, Pawl spring and belt on a Dawson ratchet release shackle	
Under separate cover:	-
· Individual Test Certificate & Thorough Examination if required.	
· E.C. Declaration of Conformity	

# introduction

This robust pile lifting shackle was designed and developed over many years of site use and abuse.

The use of these shackles compliments the "Feet on the Ground" approach to steel erection and pile installation. 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 'U' piles, '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.

## FEATURES

- Robust high strength cast steel body. High alloy steel pin.
- Pin mechanism concealed for maximum protection.
- Heavy web stiffening to withstand side lift (i.e. 90° to the axis) imposed when lifting piles from a stack.
- Pin mechanism easily detachable for maintenance.
- Lifting ring at top of shackle to enable lifting from a variety of angles.
- Independently proof load tested to twice the Safe Working Load. Test certificates are supplied with each shackle.
- Shackle throat depth available in two sizes: 150 mm (6") or 250 mm (10") to suit typical lifting hole positions.
- Quick coupling and release of shackle from piles ensuring maximum productivity.
- Can be used for lifting columns, pipe piles, sheet piles & steel fabrications.
- Positive pin release at the proper time.
- Design tested to 5x SWL. Every individual shackle tested to 2x SWL.

# method of operation

1. With the pin retracted, slide the shackle over the head of the pile to be lifted until the pin is appropriately over the lifting hole. Press the ratchet pawl down with the thumb of one hand and turn the release nut of the shackle with the other hand.

Turning in a clockwise direction will propel the pin through the lifting hole. The indicator bar should finish flush with the release nut which means that the pin is fully entered into the opposite side of the shackle.

2. Two soft ropes should be attached to the small 'D' shackles at each end of the toothed belt.

3. The unit may then be lifted. It is prudent to tie the ends of the shackle release ropes to the bottom of the unit of lift to prevent the ropes becoming snagged or being caught by the wind and become inaccessible.

4. After securing the unit of lift, the shackle is released by pulling the release ropes first one way then the other until fully released. The ratchet action withdraws the pin. The stroke of the pull is limited by the 'D' shackles at the end of the toothed belt (450 mm maximum length).

**Important:** Unauthorised alterations invalidate the SWL of the shackle. If alterations are known or noticed, **do not use!**

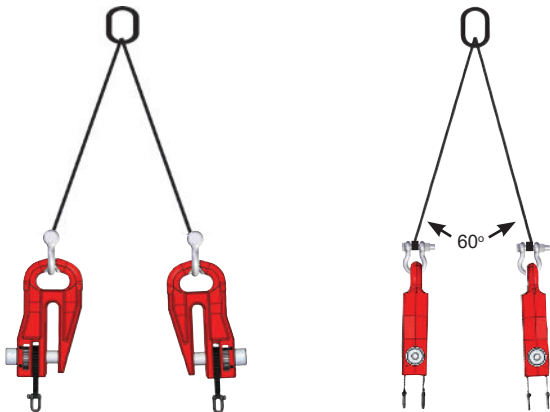
# lifting piles correctly

## LIFTING PAIRS OF PILES

Prior to any lift, consult the lift planner.

When lifting sheet piles in pairs, it is necessary to use a pair of shackles.

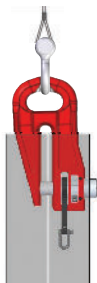
The ring at the top of the sling can be hooked directly onto a standard crane hook block, D shackle or fork anchor. The sling also enables the shackles to be turned to fit opposite faces of box or tube piles using the standard sling and shackles.



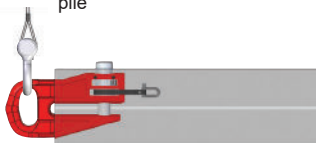
Downrate in accordance with national codes

# continued-lifting piles correctly

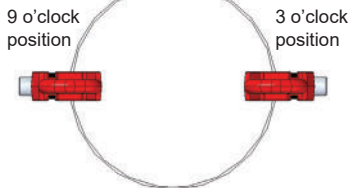
SAFE  
Axial loading



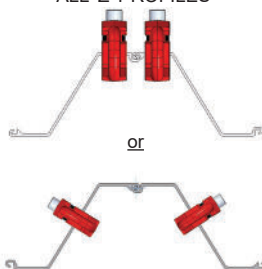
SAFE  
Lifting off a stack at  
90° to the axis of the  
pile



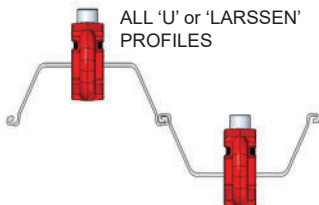
TUBE PILE



ALL 'Z' PROFILES



ALL 'U' or 'LARSEN' PROFILES



'H' PILE



# safety check list

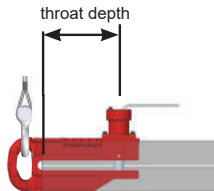
## 1) PRE-INSTALLATION CHECKS

Prior to installing a shackle onto any steelwork, check the following:

- a. Ensure a competent person has conducted a visual inspection of the shackle and has authorised the shackle for use. If any doubts arise, do not use.
- b. Establish the weight of the lift involved and ensure a shackle with an appropriate Safe Working Load is being used. The Safe Working Load rating of any shackle is based on a "best condition". For uneven leg loading on slings, dynamic loading during the lift, or any other factor that increases component loading, the SWL of the equipment should be derated in accordance with instruction from the lift planner.
- c. Ensure the lifting hole is at the correct distance from the top of the steelwork, i.e.:
  - 150 mm for a 150 mm throat depth shackle;
  - 250 mm for a 250 mm throat depth shackle;
  - 300 mm for a 300 mm throat depth shackle.



**Incorrect hole placement in steelwork may cause shackle failure!**



- d. The lifting hole should be neatly drilled or punched and of a suitable size to suit the threaded pin.

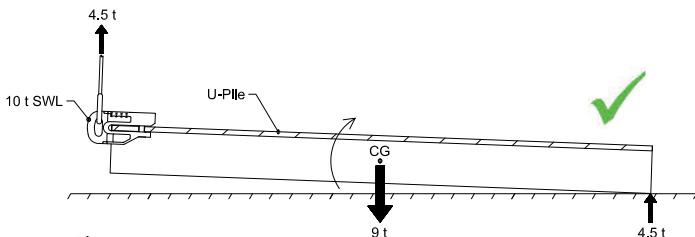
- 2) Do not use the lifting shackles for pulling or extracting.
- 3) Ensure that the pin has gone through both sides of the shackle body.
- 4) Do not modify the lifting shackles or any part of the lifting apparatus. Keep the burning torch well clear!
- 5) Keep the release mechanism well lubricated.

# continued - safety check list

- 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  $90^\circ$ .
- 8) Ensure that all appropriate laws, bye-laws and regulations are complied with.



When lifting steelwork from horizontal to vertical, or vice versa, the SWL rating of any DCP shackle is **halved**. In the example shown below, assume the shackle is rated at 10 t SWL. When using the shackle in the orientation shown to conduct a lift, the SWL is halved to 5 t. However, for example, 9 t steelwork can still be lifted as half of its load is supported by the ground. The load on the shackle is therefore 4.5 t (and hence within the 5 t SWL limit). **If in doubt, consult the lift planner.**



Keep **fingers out** of the shackle throat at all times.



Keep all personnel out of the **danger zones / fall zones** at all times unless unavoidable.



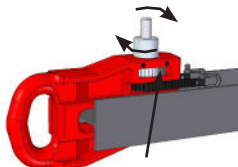
Do not use shackles in temperatures below  **$-15^\circ\text{C}$  ( $5^\circ\text{F}$ )**. Consult the manufacturer for further information on low-temperature solutions.



Shackles **must not** be subjected to vibrations from piling equipment.

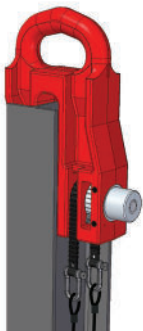
# installation & release diagrams

## 1. Insert pin.



With the pin retracted, slide the shackle over the material to be lifted until the pin is approximately over the lifting hole. Press the ratchet pawl down with thumb of one hand and turn the release nut of the shackle clockwise with the other hand. Continue turning until the pin has gone through the hole in the material to be lifted and into the opposite of the shackle. The indicator bar should be flush with the face of the release nut.

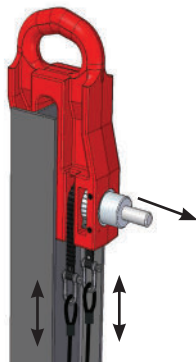
## 2. Hoist to position



Two soft ropes should be attached to the 'D' shackles at each end of the toothed belt. The material may then be lifted.

## 3. Release shackle after material has been secured.

After lifting & securing the material, the shackle is released by pulling the release ropes first one way then the other, until fully retracted. The ratchet action withdraws the pin. The stroke of the pull is limited by the 'D' shackles at each end of the toothed belt (450mm maximum length).



# 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 lifting equipment for the job.

# maintenance & storage

The shackle is manufactured from high quality material and assembled in a manner designed to offer long service with minimal 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. The user must carry out regular inspection and servicing.

The shackle must be thoroughly examined in accordance with local regulations & jurisdiction. DCP recommend a thorough examination every 6 months.

A competent person should visually inspect the shackle before every single lift.

The shackle body should be checked regularly for distortion arising from overload - **if deformed - dispose**.

The pin should be checked for smooth travel and moving surfaces should be lightly oiled.

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.

During transport, handling & storage, it is imperative that the threaded pin is in the engaged position. The indicator bar must be flush with the release nut.

Shackles should be stored in a dry & secure environment, ensuring they are protected from adverse weather & accidental damage.

# technical spec

	MODEL No.									
	681A/A	682A/A	683A/A	684A/A	686A/A	687A/A	688A/A	689A/A	692A/A	693A/A
A	Ø20	Ø20	Ø24	Ø24	Ø27	Ø35	Ø35	Ø27	Ø27	Ø35
B	158	258	158	258	258	158	258	158	303	303
C	277	377	277	377	377	277	377	277	360	360
D	78	78	78	78	78	78	78	78	80	80
E	35	35	35	35	35	35	35	35	40	40
F	30	30	30	30	30	30	30	30	32	32
G	160	160	160	160	160	160	160	160	202	202
H	55	55	55	55	55	55	55	55	60	60
J	R17.5	R17.5	R17.5	R17.5	R17.5	R17.5	R17.5	R17.5	R20	R20
WEIGHT	15 kg	19 kg	15 kg	19 kg	19 kg	15 kg	19 kg	15 kg	22 kg	22 kg

## Model No. - Size

681A/A - 3.5T ERRS 150 Throat

682A/A - 3.5T ERRS 250 Throat

683A/A - 5T ERRS 150 Throat

684A/A - 5T ERRS 250 Throat

686A/A - 7.5T ERRS 250 Throat

687A/A - 10T ERRS 150 Throat

688A/A - 10T ERRS 250 Throat

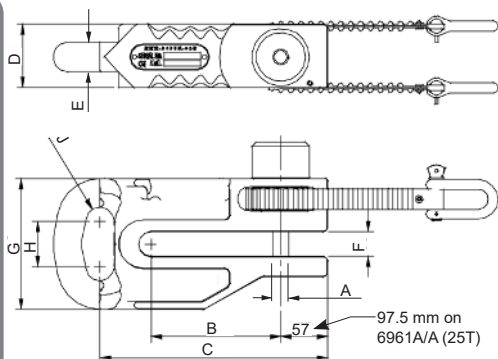
689A/A - 7.5T ERRS 150 Throat

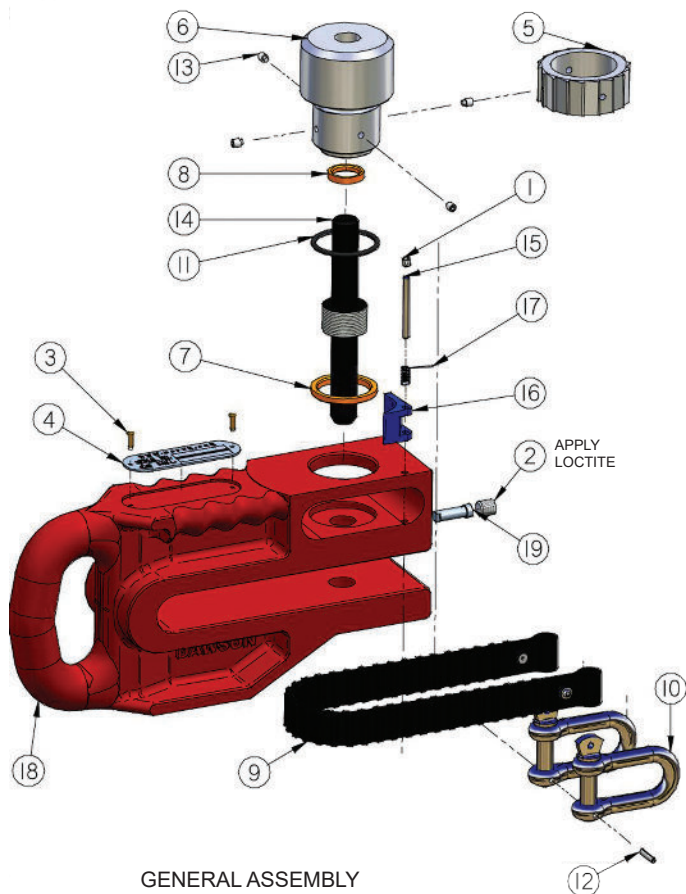
692A/A - 7.5T ERRS 300 Throat

693A/A - 10T ERRS 300 Throat

6961A/A - 25T ERRS 250 Throat

6962A/A - 40T ERRS 250 Throat





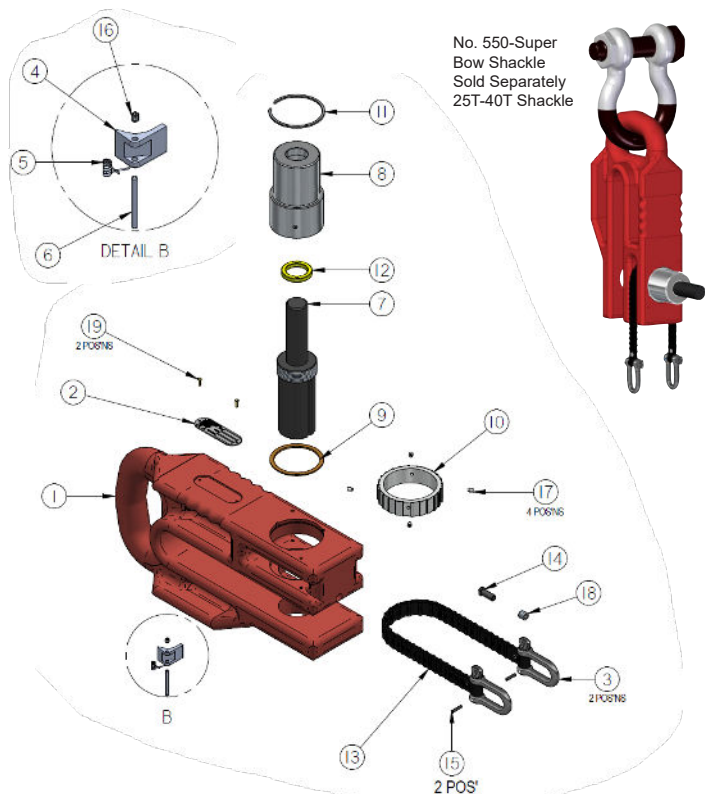
GENERAL ASSEMBLY

# parts list

Item No.	Qty	Part Name	MODEL No.									
			681 A/A	682 A/A	683 A/A	684 A/A	686 A/A	687 A/A	688 A/A	689 A/A	692A	693A
1	1	Socket Set Screw M6 x 6	0M06-006-05									
2	1	Socket Set Screw M12 x 12	0M12-012-05									
3	2	No.6 x 1/2" Rivet	1-204-00-01									
4	1	Shackle ID Plate	5938									
5	1	Ratchet Collar Machined	604					642	642	604	604	642
6	1	Release Nut	605					643	643	605	605	643
7	1	Nylon Ring	606	606	606	606	606	644	644	606	606	644
8	1	Rubber Buffer Stop	607R									
9	1	Ratchet Belt Assy	608A									
10	2	Small D Shackle	609									
11	1	O-Ring	610									
12	2	Spring Pin	0M04-020-22									
13	4	Dog P't Grub Screw	0M06-008-16									
14	1	Threaded Pin	621	621	671	671	601	641	641	601	601	641
15	1	Dowel, Ø50 x 50	626									
16	1	Pawl	627									
17	1	Pawl Spring	628									
18	1	*ERRS Main Body	661/A	666/A	662/A	667/A	668/A	664/A	669/A	663/A	678	679
19	1	Guide Peg	672									

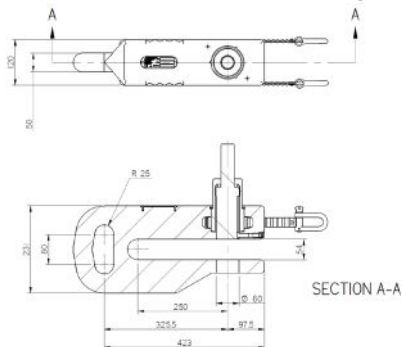
\* Not available for part resale.

# parts list - 25t shackle



25T ERRS 250 THROAT - 6961A/A

# continued - parts list

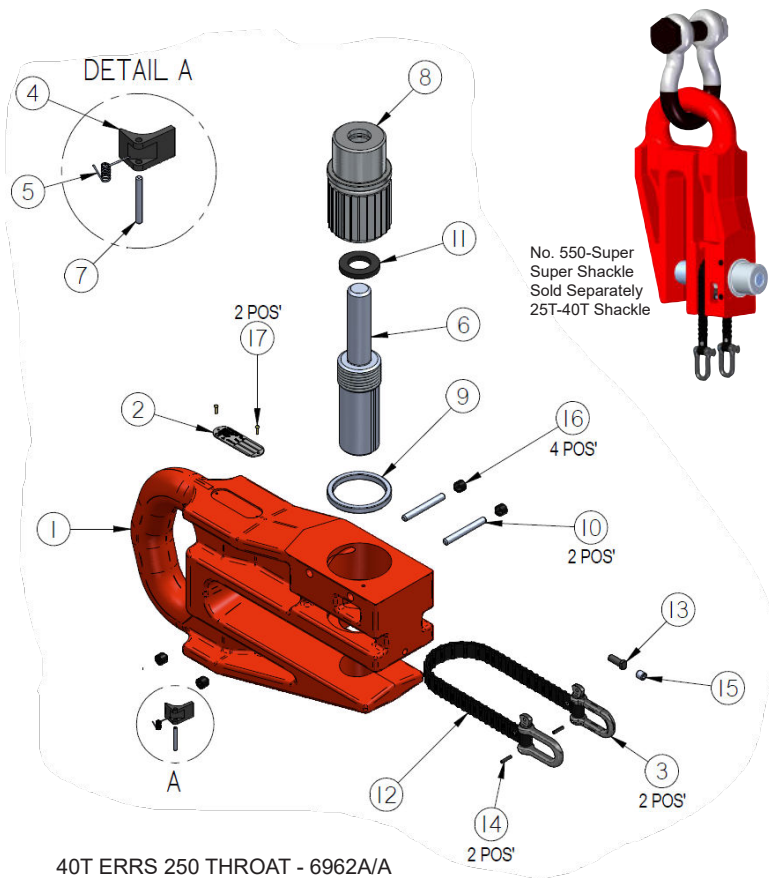


GENERAL NOTE: WEIGHT 48 kg

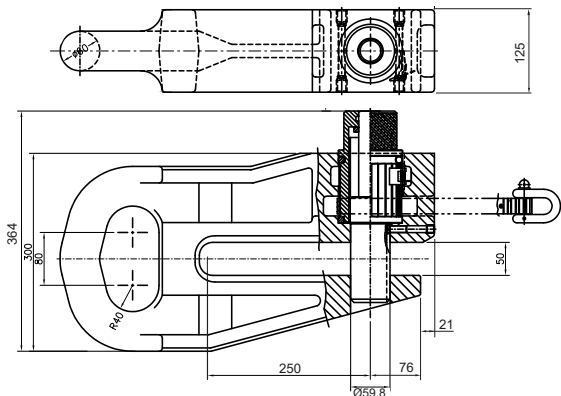
\* Not available for part resale.

Item No.	Quantity	Part Name	6961A/A
1	1	*25 Series RRS Shackle Casting	ZCAST25RRS
2	1	ID Plate, Shackles	5938
3	2	Small D Shackle	609
4	1	Ratchet Pawl	627
5	1	Ratcht Pawl Spring	628
6	1	Dowel, Ø50 x 50, A2 St. Steel	626
7	1	Threaded Pin	674
8	1	Release Nut	690
9	1	Bearing Washer	692
10	1	Ratchet Collar	694
11	1	Snap Ring	697
12	1	Rubber Buffer Stop	6932R
13	1	Ratchet Belt Assembly	6936A
14	1	Guide Pin	6942
15	2	Pin, Spring, M4 x 20	0M04-020-22
16	1	Screw, Grub, M6 x 6	0M06-006-05
17	4	Screw, Dog Point Grub, M6 x 6	0M06-008-16
18	1	Screw, Grub, M12 x 12	0M12-012-05
19	2	Screw, Electro-brassed, No. 6 x 1/2"	1-204-00-01

# parts list - 40t shackle



# continued - parts list



GENERAL NOTE: WEIGHT 67 kg

\* Not available for part resale.

Item No.	Quantity	Part Name	Part Number
1	1	*40T ERRS Shackle Machined	6902A
2	1	ID Plate, Shackles	5938
3	2	Small 'D' Shackle	609
4	1	Pawl	627
5	1	Pawl Spring	628
6	1	Threaded Pin	6912
7	1	Dowel, Ø5 x 40, A2. St. Steel	6923
8	1	Release Nut	6920
9	1	Bearing Washer	6930
10	2	Location Bar	6931
11	1	Rubber Buffer Stop	6932R
12	1	Ratchet Belt Assembly	6936A
13	1	Guide Pin	6942
14	2	Pin, Spring, M4 x 20	0M04-020-22
15	1	Screw, Grub, M12 x 12	0M12-012-05
16	4	Screw, Grub, M16 x 16	0M16-016-05
17	2	Screw, Electro-Brassed, No. 6 x 1/2"	1-204-00-01

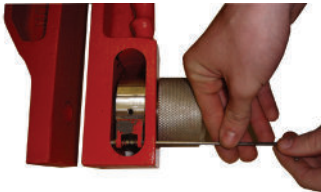
40T ERRS 250 THROAT  
GENERAL ASSEMBLY

MODEL No. 6962A/A

# euro ratchet release shackle



A GUIDE TO CHANGING THE PAWL,  
PAWL SPRING AND BELT ON A DAWSON  
RATCHET RELEASE SHACKLE



## 01

The Pawl and its return spring may require changing if badly worn or generally damaged.

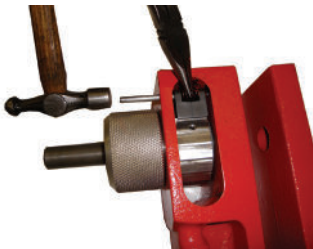
**SAFETY GLASSES SHOULD BE WORN. THE SPRING IS UNDER COMPRESSION AND MAY FLY OUT DURING THIS PROCEDURE!**

First, remove the M6 socket set screw.



## 02

Note the arrangement of pawl and spring. Slide the pivot pin out to allow removal of the pawl and spring.



## 03

Insert the new pawl. Hold the spring in place with pliers and gently tap the pivot pin through pawl and spring.

Note that the short arm of the pawl is uppermost and the “legs” of the spring are between the pawl and the body of the shackle.



# 04

Tap home the pivot pin with a small pin punch.



# 05

Refit and tighten the socket set screw. Carefully check the action of the pawl before allowing the shackle back into service.



# 06

Cut, remove and discard the old belt. Thread the new belt through the gap between the shackle body and the pawl collar.



## 07

The flush head of the pop rivet must be towards the pawl collar and the head of the screw in any "D" shackle should be towards the middle of the shackle.

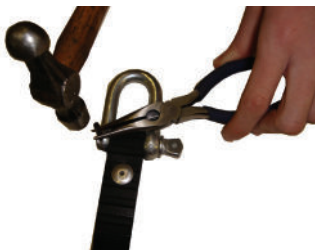
## 08

Fit the new "D" shackle(s), passing the screw through the loop in the belt as shown.

Tighten the screw, aligning the 4mm diameter holes and tap in the roll pin until flush.

**REMEMBER TO WEAR EYE PROTECTION!!!**

Check the action of the belt and ratchet before allowing the shackle back into service.





D.C.P. RESERVES THE RIGHT TO DISCONTINUE EQUIPMENT AT ANY TIME, OR CHANGE SPECIFICATIONS OR DESIGNS WITHOUT NOTICE OR INCURRING OBLIGATIONS

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

SAFETY HANDLING / LIFTING EQUIPMENT

SHEET PILE THREADERS

euro ratchet release shackle  
3.5t - 5t - 7.5t - 10t - 25t - 40t

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