

# remote release shackle

# RRS

# 100t



## safety lifting equipment

owners manual  
operators instructions  
spare parts list  
safety precautions  
maintenance

RRS 100t ver. 2017-01

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• E.C. declaration of conformity	

# introduction

The Dawson 100 tonne release shackle has been specifically designed for use on large tubes, and when used as a pair, tubes weighing up to 200 tonnes can be lifted.

The pin size is 130mm Diameter and is retracted and engaged hydraulically with a hand pump mounted on the ground complete with spooler to keep the hose under control.

The hose length is 60m allowing long piles to be positioned; because the pin is released hydraulically the operator does not need to be directly underneath the shackle.

The shackle and spooler are mounted into a fabricated frame so that loading and unloading or moving around the job site is just a single crane lift.

## FEATURES

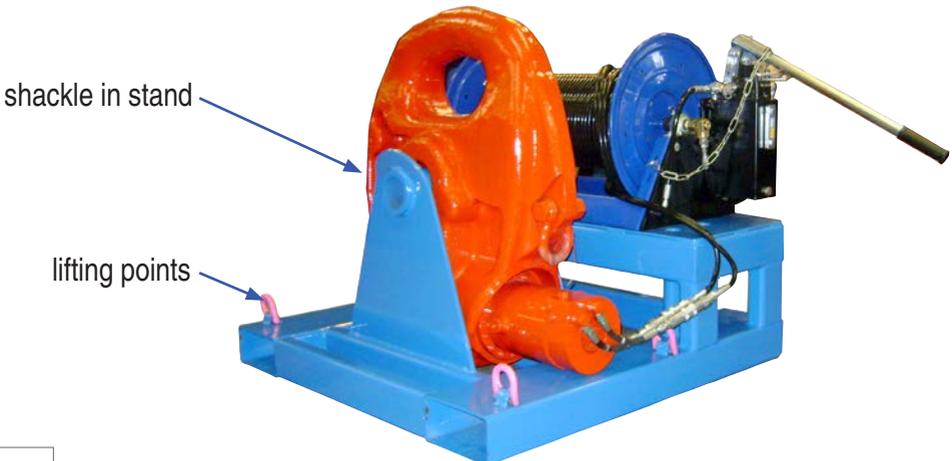
High strength cast steel body.

Pin and hydraulic ram are easily removed for easy maintenance.

Main body tested to 5 times SWL (safe working load)

Each shackle is proof tested to 2 times SWL

Hydraulic pin release.



# method of operation

When lifting tubes a pair of shackles must be used with a spreader beam to keep the two shackles separate when released. Make sure the pin is retracted.

Lower the shackle onto the ground so that it is horizontal, clip in the auxiliary chain that was supplied with the shackle, this will keep the unit horizontal when lifted up to engage with the pin. (See installation diagrams)

Position the unit onto the tube and align the pin with the lifting hole in the tube. (Make sure that the hole is positioned the correct distance from the top of the tube)



Engage the pin, **DOUBLE CHECK THE PIN IS FULLY HOME.**

Remove the auxiliary chain.

Repeat for the second shackle.

Begin lift, gently take up the slack.

Unlock the hose spooler so that it can rotate freely as the pile is raised.

Remove winder handle and place in holder.

Lift the pile up to vertical and position;  
take care not to snag the hydraulic control hoses.

When the pile is safely positioned the shackle can be released.

# cont'd - method of operation

To release the shackle:

**MAKE SURE THERE'S NO LOAD ON THE SHACKLE**

On the spooler and hand pump unit switch the selector to "release pin"

Pump with the extension bar until the pin is fully back; visually check that the indicator is back.

When both shackles are released lift them clear of the pile, the spreader beam should stop the two shackles from swinging together and clashing.

Lower the shackles to the ground, winding the control hose onto the spooler as they are lowered.

Stow the shackles safely in the stand until needed again.

# additional operation notes

## AUXILIARY HANDLING CHAINS

When offering the shackle up to the horizontal pile or tube the shackle must be in the horizontal position. To achieve this a set of auxiliary handing chains must be used, they hook on to the M16 eye bolts on the shackle, they are shown pictorially on page 9.

The length of these handing chains is critical, but depends on the bow shackle and spreader beam setup. For this reason the auxiliary handling chains are not adjusted for length and are purposely left long.

Included in the kit are two Gunnebo BKG-6-10 RT hooks and two Gunnebo G-6-10 couplers per shackle. Once the spreader beam, bow shackle, Dawson 100 ton release shackle and spreader beam set-up has been determined then the length of the auxiliary chains can be established.

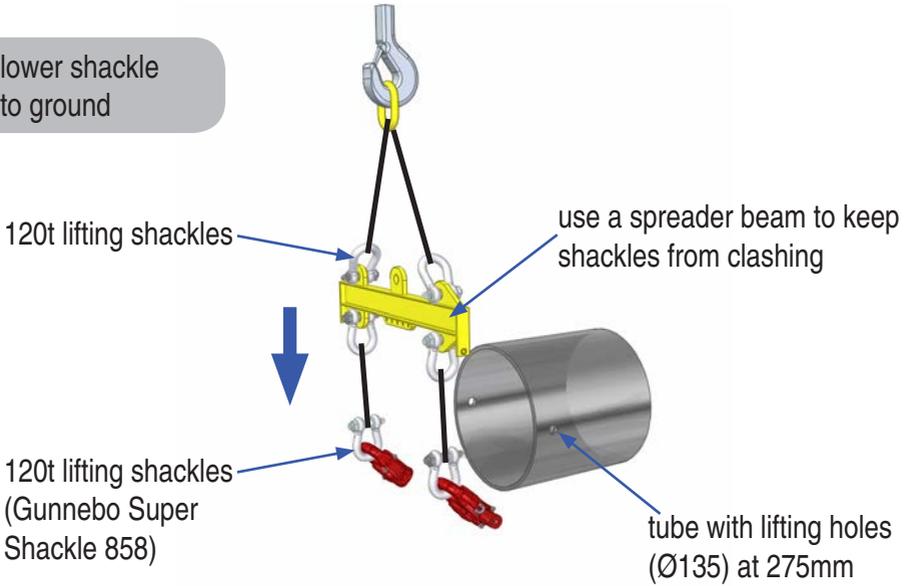
Fix one end to the auxiliary point on the spreader beam and the other end to the eye bolts on the shackle, do some trial lifts and adjust the length of chain until the shackle hangs horizontally, the angle between the shackle and the chain should be more than 45 degrees.

## BOW SHACKLE

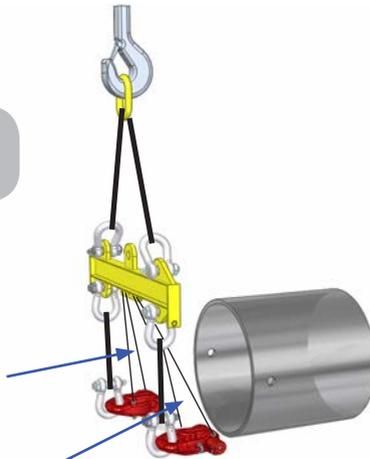
If a 120 ton bow shackle is to be used to connect the Dawson release shackle to the crane then it has to be a specific item, a Gunnebo Super Shackle 858 WLL: 120t, on this particular bow shackle diameter of the pin bosses is smaller than the usual 120t bow shackle, this allows the lift aperture on the Dawson shackle to be smaller, which adds strength and rigidity.

# installation diagram

1 lower shackle to ground



2 attach auxiliary lifting chains for horizontal lift

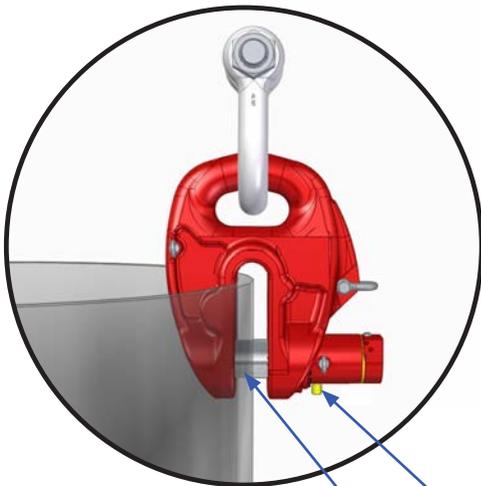


# cont'd - installation diagram

3 lift shackles and offer upto pile, align pin with holes in tube and engage pin



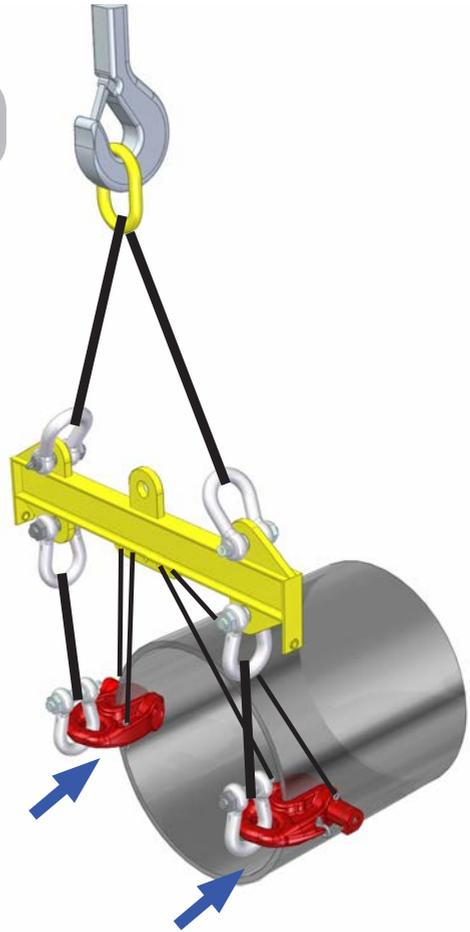
Raise safety latch & switch selector to engage



indicator bar is in



double check pin is fully engaged



# cont'd - installation diagram

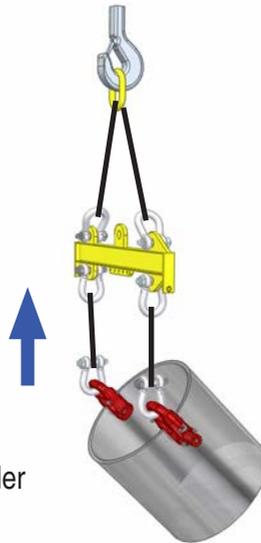
4 remove auxiliary horizontal lifting chains from shackle



5 lift to vertical

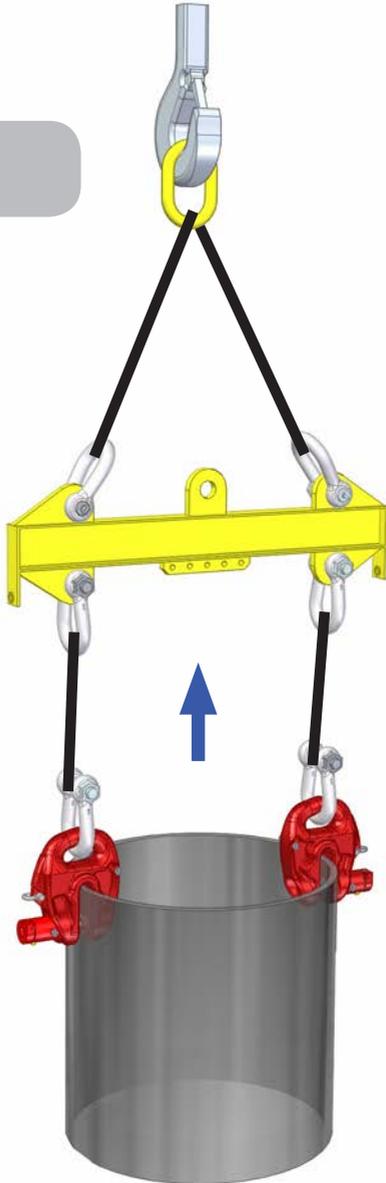


 unlock hose spooler before lift & replace winder handle back in holder



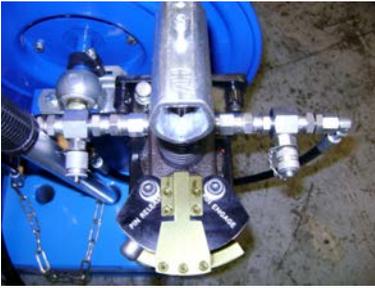
# cont'd - installation diagram

6 lift to position and secure

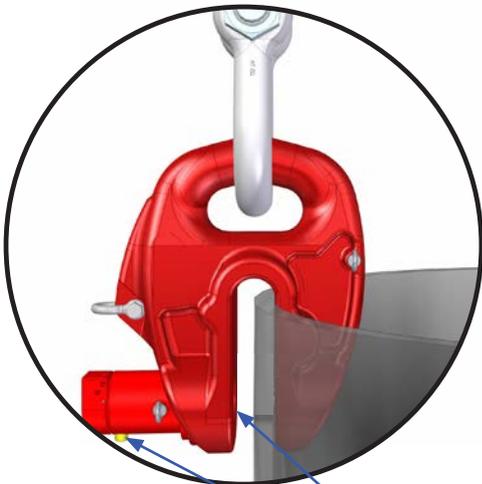


# cont'd - installation diagram

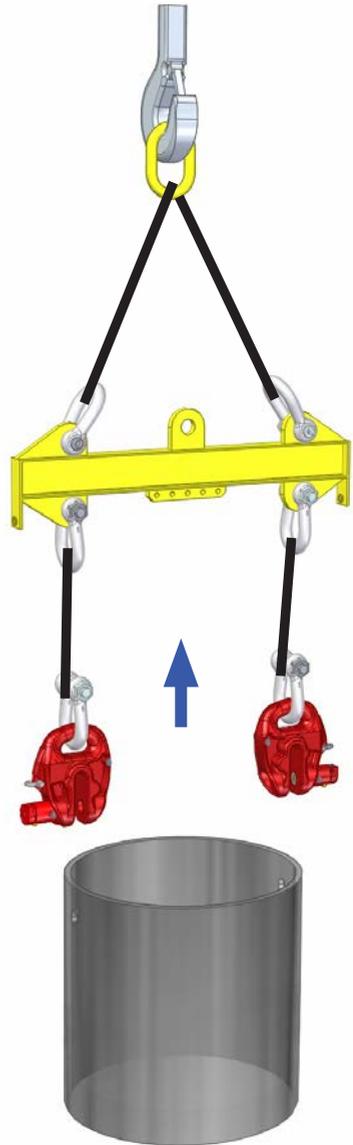
7 release pin and lift shackles away from tube, return to frame.



Raise safety latch & switch selector to pin release



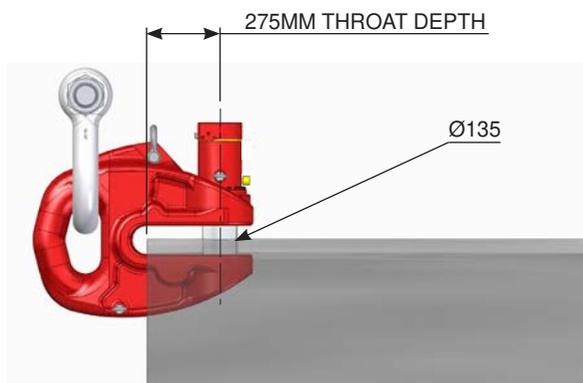
pin is retracted  
indicator bar is out



# safety check list

1. Before using the shackle please check the following,
  - a. Establish the weight of the lift and make sure the shackle is working within its SWL.
  - b. Ensure the lifting hole is the correct size and the correct distance from the top of the pile.

**Note: INCORRECT HOLE POSITION COULD CAUSE SHACKLE FAILURE.**



- c. The Safe Working Load rating the shackle is based on a purely tensile (axial) load. When lifting steelwork from the horizontal to vertical or reverse the shackle is de-rated by 50%.
  - d. The Safe Working Load rating of any shackle is based on a purely tensile (axial) load. When lifting steelwork from the horizontal to vertical or the reverse, remember that the shackle becomes de-rated by 50% .
    - i.e. a 100 tonne SWL Shackle should only be loaded to 50 tonne at the start of a horizontal lift where typically the ground takes the other 50 tonnes.
2. Ensure that the pin is fully engaged before attempting a lift

# cont'd - safety check list

3. Do not modify the lifting shackles or any part of the apparatus. Keep the burning torch well clear
4. Care should be taken to avoid the hydraulic control hoses from being snagged.
5. When using a pair of shackles make sure a spreader beam is used. If lifting a tube there must be two holes, one each side through the centreline.
6. Ensure that all appropriate laws, bye-laws and regulations are complied with.
7. It is the responsibility of the user to make sure that the load being lifted is capable of resisting the shackle tearing out, i.e. a very long thin walled tube at max weight , unlikely but possible!



**KEEP FINGERS OUT OF THE SHACKLE THROAT AT ALL TIMES AND WEAR GLOVES**



**DO NOT USE IN TEMPERATURES BELOW -15°C (5°F), CONTACT THE MANUFACTURER FOR FURTHER INFORMATION ON LOW TEMPERATURE SOLUTIONS.**



**UNDER NO CIRCUMSTANCES MUST A VIBRO BE USED ON ADJACENT PILES WHEN THE PILE BEING LIFTED IS DEPENDENT UPON THE RELEASE SHACKLES FOR SUPPORT.**



**IF DURING USE THE SHACKLE IS SUBJECTED TO ANY IMPACT, CRASHING INTO A PILE OR EACH OTHER, THEN THE SHACKLE MUST BE IMMEDIATELY INSPECTED FOR DAMAGE, THE RAM HOUSING AND ITS SECURING BOLTS, THE HOSES, HOSE FITTINGS AND Q.R.C'S IN PARTICULAR. IF ANY DAMAGE IS FOUND DO NOT USE UNTIL IT'S REPAIRED.**

# maintenance

The shackle is manufactured from high quality material and assembled in such a manner as to offer long service with the minimum of maintenance.

In order to keep the shackle in this condition it is necessary to ensure that it is not miss-used and receives regular inspections and maintenance.

The shackle body should be checked regularly for any distortion or damage, [if you've bent it - bin it](#).

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

Check the condition of the hydraulic hoses; look for, cuts and crushes.

Check the oil level in the reservoir; if it's low top up with oil to ISO-32.

# maintenance procedures

## CHANGING THE HYDRAULIC RAM.

Remove the M8 x 35 cap head screw from the end of the hydraulic cylinder rod. (17)

Check that the system is not under pressure, then remove the M6 x 20 (6) cap head screws from the ram mounting flange. (5)

Push out the ram from the rod end; make sure not to lose the 2 small O-rings. (14)

Reassemble in reserves order.

## CHANGING THE MAIN PIN.

Remove the M8 x 35 cap head screw from the end of the hydraulic cylinder rod. (17)

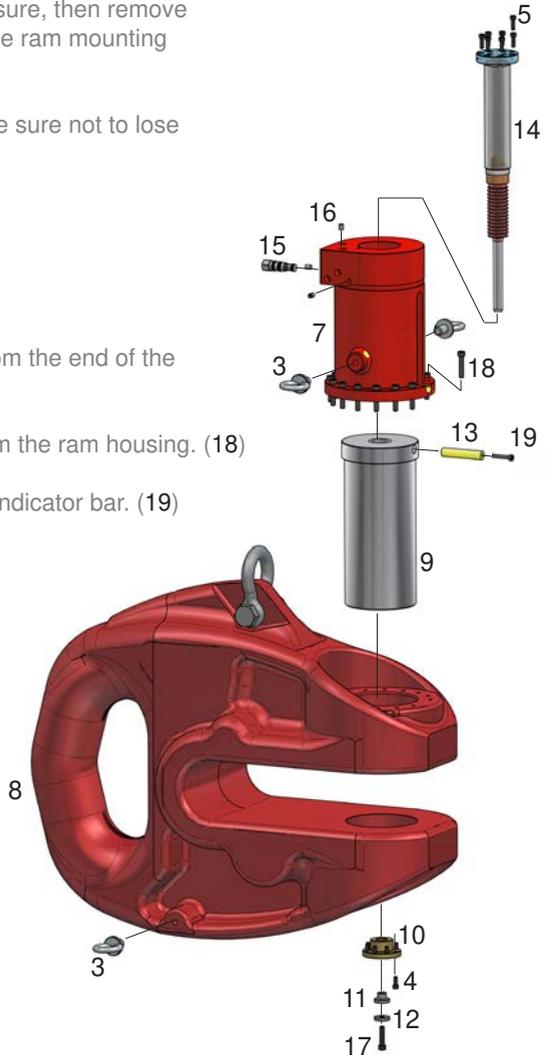
Remove the ring of 15 M8 x 40 bolts from the ram housing. (18)

Remove the M6 cap head bolt from the indicator bar. (19)

Pull the housing clear. (7)

Remove the main pin. (9)

Reassemble in reverse order.



# cont'd - maintenance procedures

## PURGING AIR FROM THE HYDRAULIC CIRCUIT

If the hydraulic circuit has been disconnected for any reason then air could enter into the circuit.

To purge the system of air,

Connect the shackle to the hoses with the QRCs,

Take out the two blanked off ports on the shackle and fit a short length of hose between them.

Make sure the oil tank is filled to max.

Pump the lever for 350 cycles, watch the oil level doesn't drop.

Before allowing operators to use the Dawson hydraulic release shackle it is important to ensure that they have received basic training in lifting and control of heavy loads.

1. Basic safety in lifting operations.
2. Supervision during lifting operations.
3. Detailed instruction on how the hydraulic release shackle works.
4. Safety features of the Hydraulic release shackle
5. Dangers and malpractices
6. Correct choice of shackle for the job.

# troubleshooting

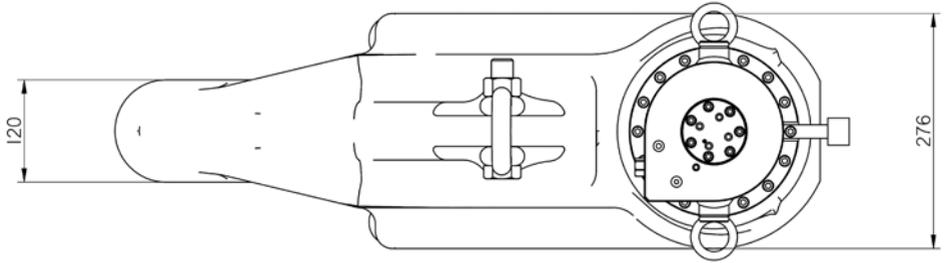
## THE PIN WILL NOT RELEASE

1. Make sure there is no load on the shackle; the pin cannot overcome the weight of the pile hanging on it.
2. Is there enough release pressure to pull out the pin, 200 bar is required; fit a gauge onto the test point on the spooler.
3. Has the twin hydraulic hose from the spooler to the shackle been snagged.
4. Does the hydraulic pump have the correct level of oil

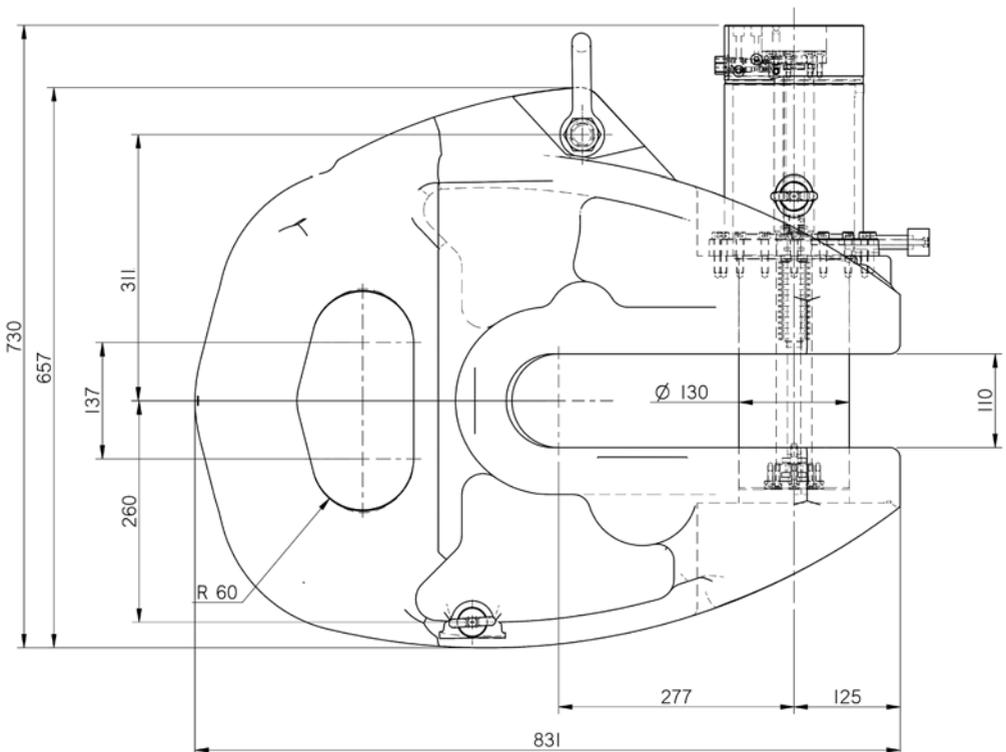
## THE PIN WILL NOT ENGAGE

1. Make sure there are no obstructions, is the lifting hole in the tube or pile  $\text{Ø}135$ ?
2. Is there enough pressure to push out the pin, at least 50 bar is required; fit a gauge onto the test point on the spooler.
3. Check condition of hoses, are there any snags?
4. Does the hydraulic pump have the correct level of oil

# weight & dimensions

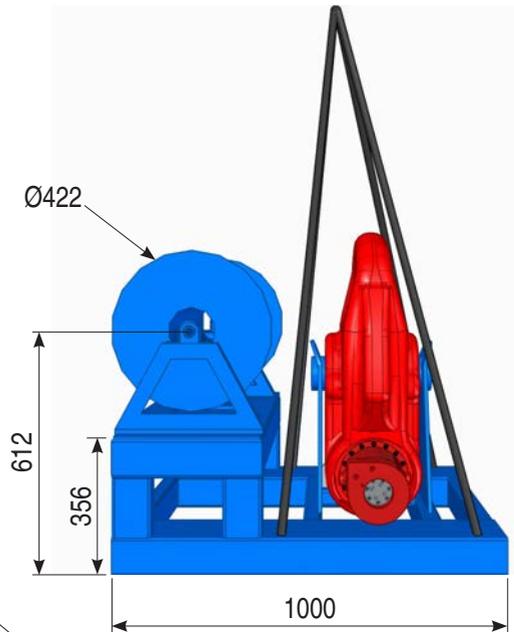
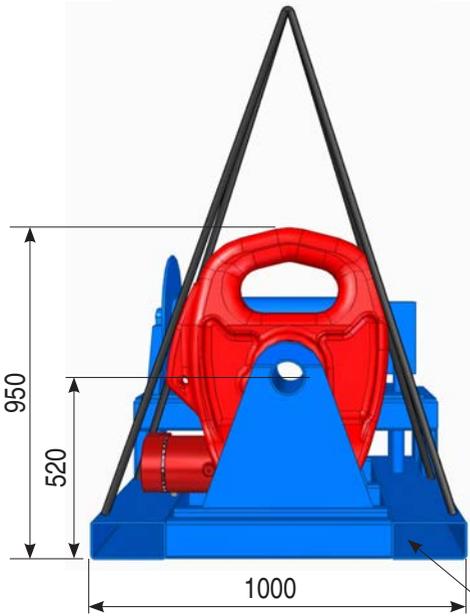
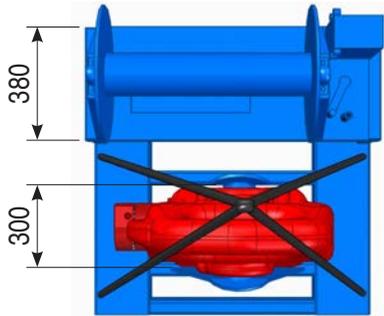


WEIGHT  
SHACKLE = 410Kg



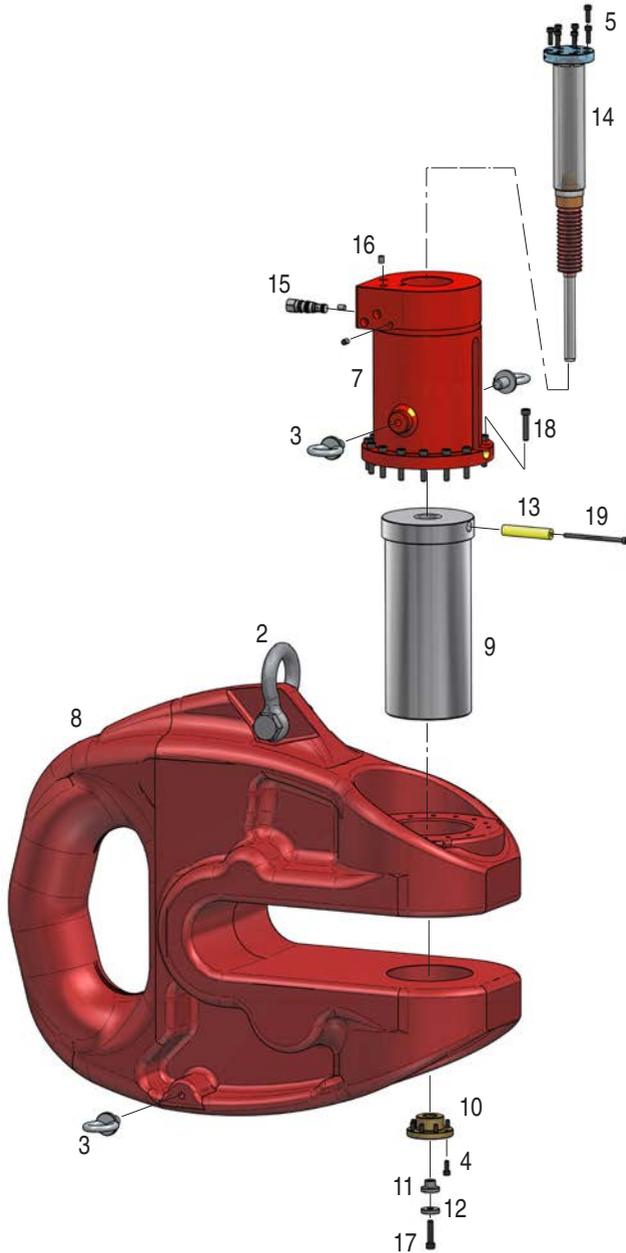
# cont'd - dimensions

WEIGHT  
SHACKLE IN STAND = 645Kg



FORK LIFT POINTS

# parts list



# cont'd - parts list

ITEM No.	QTY	DESCRIPTION	PART No.
2	1	6.5T BOW SHACKLE	-
3	4	M16 EYE BOLT	-
4	8	M6x16 SOCKET HEAD CAP SCREW	0M06-016-02
5	7	M6x20 SOCKET HEAD CAP SCREW	0M06-020-02
7	1	RAM MOUNT FABRICATION	6002
8	1	100 TON SHACKLE BODY	6003
9	1	PIN	6004
10	1	RAM ADAPTOR	6005
11	1	RAM CONNECTOR CAP	6006
12	1	RAM CONNECTOR SPACER	6007
13	1	INDICATOR BAR	6008
14	1	RAM	6100
15	1	CHECK VALVE	6107
16	3	KOENIG PLUG	MB-850-070
17	1	M8x35 SOCKET HEAD CAP SCREW	0M08-35-02
18	16	M8x40 SOCKET HEAD CAP SCREW	0M08-40-02
19	1	M6x100 SOCKET HEAD CAP SCREW	0M06-100-02

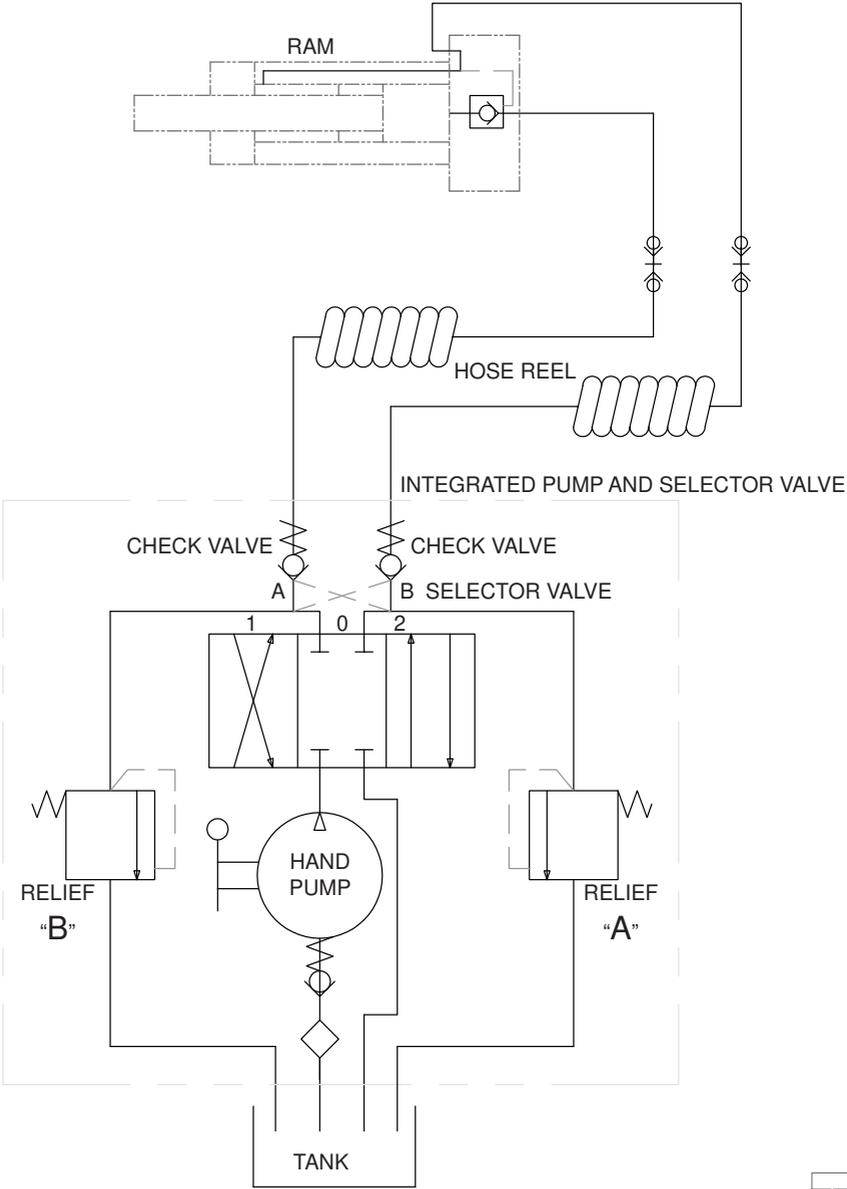
DESCRIPTION	PART No.
COMPLETE SHACKLE ASSEMBLY	6000
STAND	6300
HOSE REEL & HAND PUMP	6200

# hose kit



ITEM No.	QTY	DESCRIPTION
1	1	SINGLE THERMOPLASTIC HOSE 1/4" x 200MM (1/4/R7HA/200MM/2X20511/04/04)
2	1	SINGLE THERMOPLASTIC HOSE 1/4" x 560MM (1/4/R7HA/560MM/2X20511/04/04)
3	1	SINGLE THERMOPLASTIC HOSE 1/4" x 370MM (1/4/R7HA/370MM/2X20511/04/04)
4	2	4283 - HOSE KIT
5	2	TWIN THERMOPLASTIC HOSE x 65M (1/4R7HA/T04/65000/4X20511/04/04)
6	2	QRC M/F QUICK RELEASE COUPLING

# hydraulic schematic

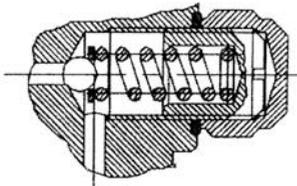


# hand pump relief valve adjustment

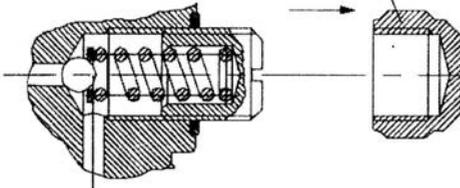
ADJUSTABLE  
RELIEF VALVE,  
PORT A  
(RETRACT PIN)  
200 PSI



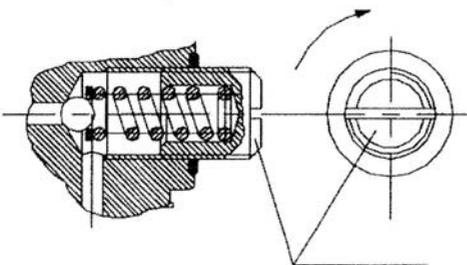
ADJUSTABLE  
RELIEF VALVE,  
PORT B  
(ENGAGE PIN)  
100 PSI



PLUG TO BY PASS

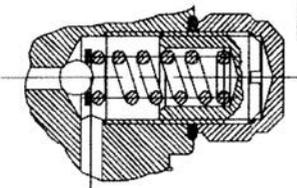


FIRST:  
UNSCREW THE PLUG



SECOND:  
TIGHTENING THE SCREW, THE VALVE  
WILL BE CALIBRATED TO A HIGHER  
PRESSURE VALUE. LOOSENING  
THE SCREW, THE VALVE WILL BE  
CALIBRATED TO A LOWER PRESSURE  
VALVE.

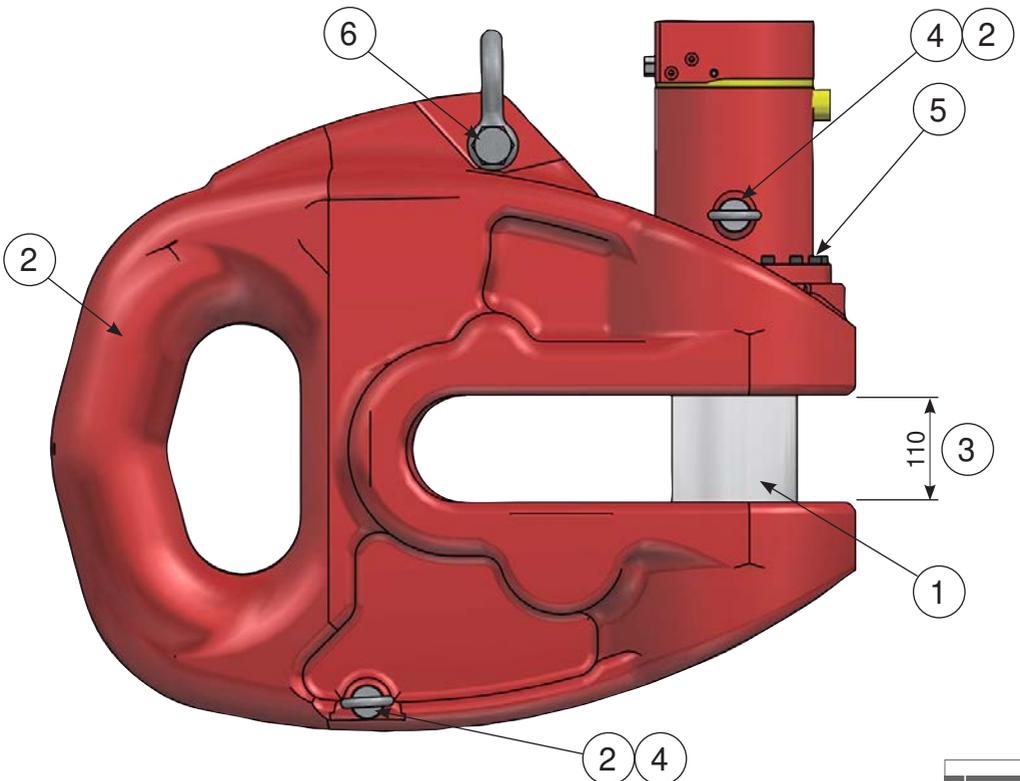
ADJUSTING  
SCREW TO  
BYPASS



THIRD:  
WHEN SET TO THE CORRECT LEVEL,  
SCREW THE PLUG AGAIN

# check procedure

1	Inspect pin for scoring and corrosion and that it slides in and out easily with no binding.
2	Check casting for damage including tapped holes for eyebolts.
3	Check casting for leg gap (no permanent distortion).
4	Check casting lift eye for damage and distortion.
5	Check all bolts are tight.
6	Check any associated bow shackles for distortion, pin damage.
7	Check entire length of hydraulic hose for any damage, cuts, crushes etc.
8	Check hydraulic pump holds pressure.
9	Check hydraulic oil level.
10	Check all hydraulic unions are tight and do not leak.





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

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INNOVATIVE PILING EQUIPMENT

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HYDRAULIC PILING HAMMERS

---

EXCAVATOR MOUNTED VIBRATORS

---

EXCAVATOR MOUNTED DRILLS

---

QUIET, VIBRATIONLESS PUSH-PULL PILING

---

PILE EXTRACTION

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SHEET PILE GUIDE FRAMES

---

SHEET PILE CAPPING SYSTEMS

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CFA CLEANERS

---

PILE POINTS & SPLICERS

---

SAFETY HANDLING / LIFTING EQUIPMENT

---

SHEET PILE THREADERS

---

remote release shackle

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