

Leaders in Advanced Cable installation Equipment

OPERATING AND MAINTENANCE MANUAL



CBS 1045 PULL AND ASSIST CAPSTAN WINCH

MODEL: C-1045-001-R4

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CONTENTS

- 1.0 Introduction
- 2.0 Safety Instructions
- 3.0 General Description
- 4.0 Specification
- 5.0 Operating Procedure
- 6.0 Maintenance and Servicing
- 7.0 Towing instructions
- 8.0 Equipment Layout
- 9.0 Spare Parts

APPENDICES

Appendix 1	Hydraulic Circuit Drawing	C-1045-AS1028
Appendix 2	General arrangement drawing Model :- C-1045-001-R4	C-1045-AS1055-R1
Appendix 3	Certificate of conformity	
Appendix 4	Engine Operator Manual (supplied loose from the engine manufacturer)	

1.0 INTRODUCTION



CBS Products (KT) Ltd. is a long established U.K company situated in rural Oakham, Rutland. From its 4-acre site, CBS Products (KT) Ltd. design, manufacture, test and market a comprehensive range of quality products for the electricity, telecommunication and CATV industries. Products include overhead line and underground winches, cable drum trailers and stands, stringing equipment, in fact everything required for the installation or erection of conductors and cables.

With a long history of designing standard and specialised equipment to meet the needs of customers worldwide, CBS Products (KT) Ltd. has invested in the latest computer aided design and analysis systems and an integrated manufacturing plant.

The CBS Products (KT) Ltd. Design Facility is available to discuss specific customer requirements for any product / project, existing or new. Please contact CBS Products (KT) Ltd. for further information.

CBS Products (KT) Ltd. operate stringent quality controls throughout the organization and has a quality assurance system certificated to ISO 9001: 2015. Our total commitment to providing quality products and service is reflected in the high standard of the finish, use and long life of all our products.

There are certain controls and control functions, included in the winch, which are critical to the safe operation of the winch. These **safety critical** controls are clearly marked in the manual with the following symbol. It is imperative that these operating and maintenance procedures are followed exactly, to ensure safe operation.



2.0 SAFETY INSTRUCTIONS

THIS EQUIPMENT MUST ONLY BE USED BY AUTHORISED PERSONNEL, WHO HAVE BEEN SUITABLY TRAINED AND COMPETENT TO DO SO.

THESE INSTRUCTIONS ARE TO BE MADE AVAILABLE TO OPERATORS OF THIS EQUIPMENT AT ALL TIMES, FAILURE TO OBSERVE THESE SAFETY INSTRUCTIONS COULD RESULT IN SERIOUS PERSONAL INJURY AND / OR PROPERTY DAMAGE.



1. Read and understand the operation and maintenance manual supplied with this equipment. Keep it in a convenient place for future reference.
2. Keep children and untrained personnel away from this equipment whilst in operation.
3. Keep all guards and safety devices in place. Do not operate this equipment with guards removed or damaged.
4. Keep hands, feet and loose clothing away from moving parts.
5. Always stop the machine to carry out lubrication or servicing.
6. Check machine before starting for worn or damaged parts. Check that all nuts and bolts are tight.
7. If machine is left unattended, ensure that unauthorized use is prevented.
8. Never leave the machine unattended whilst in use.
9. Use safety barriers to create an exclusion zone and prohibit access by any person(s) to the winch except the operator, this is especially important when used in public places.
10. Beware of pinch points involved with rotating components, e.g. rope/cable drums, capstans, bullwheels, shafts and chain drives.
11. Beware of hot surfaces, especially around the engine, engine exhaust pipe and hydraulic oil tank.
12. Some component and assembly parts are in excess of 25kg (55lb). When lifting care must be taken, ensure sufficient man power/lifting gear is available, to prevent personal injury and damage to the machine.
13. Beware of exposed electrical contacts especially around the engine. Do not touch, or allow metal objects to come into contact.
14. Keep feet away from manually operated props.



15. When draining the engine oil or the hydraulic oil tank always ensure that no fluid is spilt, and that waste engine oil and hydraulic oil are to be disposed of via an environmentally acceptable method e.g. passed on for re-cycling.
16. Wear ear defenders when engine is running to prevent ear damage.
17. Suitable protective clothing, approved footwear, gloves, eye protection and hard hat must be used by the operator when using, servicing or maintaining the winch.
18. Machine may cause additional fire hazard if involved in an existing fire due to petrol/diesel, oil and hydraulic oils involved, suitable precautions against possible fire must be taken before the winch is used.
19. No personnel are to be in manholes or ducts when the winch is being operated, if applicable.
20. Be aware of hot exhaust gases expelled from the engine exhaust silencer, no personnel to be in the vicinity of the engine exhaust outlet when the engine is running.
21. The machine must be operated on firm ground in a level and stable condition suitably anchored down for the pulling operation to be undertaken. 
22. Always ensure that the winch is in line with the direction of the pull, failure to do so may result in permanent damage to the chassis or drum frame. 
23. Stay clear of hydraulic hoses when pressurised.
24. Never try to release the hydraulic hoses when the hoses are pressurised.
25. Escaping fluids under pressure can penetrate the skin and cause serious personal injury.
26. Check for leaks with a piece of cardboard. Do not use your hands.
27. Do not exceed working pressure of hydraulic hoses.
28. Do not allow the hoses to come in to contact with any harmful substances that may cause damage.
29. Ensure all hydraulic connections are securely tight before operating the machine.
30. Never re-fuel the engine mounted fuel tank whilst the engine is running, the engine must be stopped and allowed to cool down.
31. When re-fuelling always ensure that the correct grade of fuel is used and that no fuel is spilt.

32. During filling of hydraulic oil, engine oil and fuel always ensure that none of the liquid is spilt.
33. Do not use the winch if lighting levels are poor, such that make operation hazardous.
34. When topping up or re-filling the hydraulic oil tank always ensure that the correct grade of hydraulic oil is used and that no hydraulic oil is spilt.
35. Do not operate the winch with any component parts removed, missing or damaged.
36. Do not use or manoeuvre the winch on surfaces or in a position that is unstable and/or inclined that could result in the winch rolling, sliding or turning over.
37. Do not allow the engine on the winch to run for long periods while the hydraulic circuit is not in use.
38. The winch must be used in a position that allows good circulation of cooling air around the engine and winch, do not use in confined spaces.
39. Avoid unnecessary contact with the winch when running, as the engine causes vibration.
40. Avoid using the winch in thunderstorm conditions and/or where there is a risk of lightning, snow / ice or high winds.
41. The winch must not be used in a potentially explosive atmosphere.
42. The operator must take care not to trip or fall when moving the winch.
43. The operator should monitor the winch for potential problems and hazards when the winch is in use, these may arise slowly, quickly or suddenly.
44. Stay clear of cables or lines under tension.
45. Only use the machine for its intended purpose.
46. Do not tamper with pressure relief valves or pressure reducing valves.
47. Prior to Transit always ensure that the trailer has a positive Nose Weight at the towing coupling and does not exceed the maximum specified in Section 4.
48. Ensure the nose weight is within the limit of the towing vehicle.
49. When towing always ensure that the rope/cable is fixed securely, this to prevent uncoiling during transit.
50. The trailer should be in a level position when towing (Chassis side members in a horizontal attitude).



51. Before towing the trailer, connect the breakaway cable to towing attachment on towing vehicle, ensure that it passes through the guide hole in the front chassis support bracket, check the condition, if frayed, kinked or damaged, replace immediately. 
52. Always ensure that the rope take-up drum retaining lynch pin is correctly fitted to the drum shaft, (failure to do so may result in the rope take up drum not being completely secured), the spring on the lynch pin should close against the pin shaft, refer to Section 5.7 for details. 
53. Always tighten the capstan retaining clamp nut. 
54. When towing always ensure that the jockey wheel is facing to the rear, fully retracted such that the wheel is no longer free to rotate and is fully raised into the chassis and secured. 
55. When using a split drum, ensure that the retrieved conductor is suitably restrained for removal from the split drum.
56. Deploy Warning Triangle when rear lights removed 
57. The winch must not be operated until full training and compliance with the directives of this Operator Instruction Manual and the Operator Instruction Manual for any other equipment to be used in conjunction with has been fully completed. 

3.0 GENERAL DESCRIPTION



The CBS Products (KT) Ltd. C-1045 is a Trailer Mounted Pull and Assist Capstan Winch. The sturdy all-steel fabricated chassis is equipped with torsional rubber suspension axles, stabilising prop legs, front telescopic jockey wheel and towbar.

The power source is a petrol engine which drives the fixed displacement tandem mounted hydraulic pumps. One pump powers a hydraulic motor, through an in-line planetary gearbox, to the capstan. The second pump drives the rope take-up drum again through a hydraulic motor.

The hydraulic oil tank is fitted with double filtration protection, sight glass and filler/breather. Controls are operator friendly and very simple in operation. A spring centred lever controls the direction of rotation of the capstan, whilst a de-dented control lever engages the take-drum drive. A control knob can be used to limit the rope/cable tension using the panel mounted tension indicator.

The basic standard rope take-up drum is removable and can be split to enable removal of rope. See Operating Procedure in section 5.0 for further details. An optional fixed drum is also available and this is suitable for use with the CBS Products (KT) Ltd. C-1045-060 drum stand.

The capstan has a facility to be rotated through 180° and operated at 30° increments in between, in this mode the drum re-wind facility cannot be used and the winching operation becomes a 2 person operation, one to operate the winch and one to control the rope / cable pulling operation, in this mode safety and responsibility lies solely with the operators.

When the winch is in the working mode the rear props are extended out of the chassis to provide greater stability.

An emergency stop push button is located on the control panel.

4.0 SPECIFICATION

Winch VIN
Vehicle Identification Number	
Max. Pulling Capacity	500 Kg 1000 Kg with optional secondary capstan
Rope Speed Max.	60 M/min
Capstan Diameter	813 mm
Overall Dimensions:	
	Lengths
	Overall – 3235 mm
	Coupling centre to rear of trailer - 3193mm
	Trailer excluding the coupling device - 2546mm
	Centre of rearmost axle to back of trailer 1084mm
	Width – 1656 mm
	Height – 1470 mm
Weights:-	Weight unladen (inc. drum not including rope) 650kg Max. payload 60kg (Note:- Nose weight not to exceed 75kg) Max. laden weight 710kg 800M of 8mm diameter rope 53kg
Load indication:	Calibrated gauge bezel
Main drive	Fixed displacement tandem pumps to fixed displacement high torque motors.
Gearbox:	In-line planetary gearbox (capstan drive)
Gear oil grades	-20°C to +30°C Shell Omala oil 150 +5°C to +30°C Shell Omala oil 100 +30°C to +50°C Shell Omala oil 320 -30°C to +65°C Tivela oil SA Refer to the instruction manual supplied with the gearbox for alternative oil types and grades
Controls:	A. Pay-in / pay-out spring centered control valve. B. De-dented take- up drum drive control valve. C. Tension control knob D. Tension indicator F. Emergency stop push button

Hydraulic circuit: Closed circuit system with full filtration and overload protection

Hydraulic oil tank

Capacity 63 litres

Hydraulic Oil grade: Moderate Climate Tellus 32
Very Hot Climate Tellus 68
Very Cold Climate Tellus T15

Environment friendly Alternative: Moderate Climate Bio 32 Ester Based Environment Friendly

Chassis: All steel welded construction with extendable rear prop legs.

Prop Legs: The Winch is fitted with manually operated extendable rear prop legs to give greater support during the winching operation.

Axle: Single axle with independent torsional rubber suspension and drum brakes.

Brakes: To EC standard for road going and fitted with an auto-reverse facility.

Hydratow coupling

Fixing nut torque 80 Nm (59 Lb ft)

Nose Weight 75 kg Maximum

Coupling Height 430mm +/-35mm

Towing Vehicles Categories M1, M2 and N1

Tyres

Tyre size 155/80 R 13

Tyre pressure 2.7 bar (39 P.S.I.)

Wheel nut torque 90 Nm (66 lbft)

Max. speed 100 kph (60 mph)

Lighting

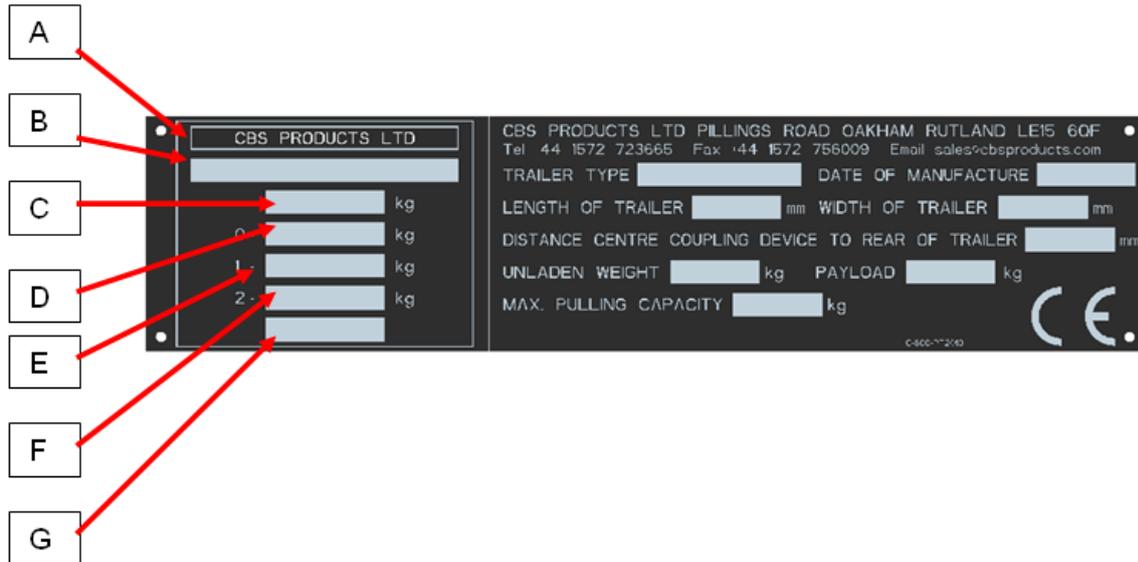
A 13 pin 12 VOLT lighting plug is fitted to the trailer and wired to current E.U. regulations.

A 13 pin socket should be fitted to the towing vehicle.

(A 7 pin vehicle to 13 pin trailer conversion adaptor is available to suit 7 pin vehicles, Note:- the reversing lamp will not work with this adaptor as there is not a wire available for the reverse lamp function, to obtain this function the vehicle should be changed to a 13 pin socket).

A detachable rear lighting frame is fitted to the winch, when removed from the winch always ensure that it is placed in a safe and convenient place, when reassembled always check the light functions prior to towing.

Statutory Plate Information



- A Name of Manufacturer**
- B Vehicle Identification Number (VIN)**
- C Maximum Permitted Laden Mass of the Trailer**
- D Maximum Permitted Coupling Nose Weight**
- E Maximum Permitted Laden Road Mass for the 1st Axle from the front**
- F Maximum Permitted Laden Road Mass for the 2nd Axle from the front (If applicable)**
- G Year of Manufacture**

CBS PRODUCTS (KT) LTD. RECOMMEND OPERATORS WEAR EAR PROTECTION WHEN OPERATING THE WINCH

Noise at operator workstation

Equivalent continuous A-weighted dB(A)
 Peak instantaneous C weighted Pa
 Sound power level Pa

	1) dB(A) LEQ	2) Pa (LP)
Noise at operator work Station	111.5	136.1
Noise at 1 metre	110.7	136.1
Noise at 2 metres	109.9	136.1
Noise at 3 metres	109.5	136.1

5.0 OPERATING PROCEDURE

IT IS IMPERATIVE THAT ALL PERSONS USING, OPERATING OR MAINTAINING THIS WINCH BE FULLY TRAINED AND COMPETENT TO DO SO, AND HAVE READ THE ENTIRE OPERATING MANUAL.



CBS PRODUCTS (KT) LTD. CANNOT BE HELD RESPONSIBLE FOR MIS-USE OF THIS EQUIPMENT.

5.1 CONTROLS

The operator controls have been designed to be safe and simple to use, with due regard to ergonomic considerations. The operators control station is complete with the following:

- A Control lever for winching in and paying out. This provides bi-directional selection of capstan rotation. The valve spool has a soft start facility allowing for a limited creep and inching movement.
- B Control lever for operation of the front take-up drum. This lever should be in its operating position before operating the capstan. If the winch is not being used, or the retrieving drum not required this lever should be returned to its non-operating position, thus saving on fuel and preventing the hydraulic oil from overheating.
- C Tension control knob. This can be used to limit the actual pulling tension applied to the pulling bond.
- D Pressure gauge which is also an indication of the pulling tension.
- F Emergency stop push button.

See Section 8 Layout of Equipment for details.

5.2 PRE-WINCHING PROCEDURE

- Prior to using the winch for any hauling application, it is important to ensure that the rear prop legs are extended and lowered in order to level the winch, and that the front jockey wheel is also lowered to a position where the winch is firm and stable. The winch should be securely anchored to either a suitable vehicle, ground anchors or other substantial holding point. The winch should be in line with the direction of pull. Ensure that the handbrake is applied. 
- Refer to the pre-winchng maintenance checks in section 6.1 
- The capstan should be in the **PREFERRED** In-Line working position, (inline with the take-up rope drum). Ensure that the capstan support bracket retaining pin 

and R-Clip are correctly replaced (if applicable), Note the retaining pin and R-Clip in the central capstan support can only be fitted with the capstan inline with the centreline of the winch or at 90° to the centreline of the winch. For 30° intermediate positions a retaining pin and R-clip is fitted through the capstan support plate and chassis plate to prevent the capstan rotating during operation

(NOTE:-The capstan has a facility to be rotated through 180° and operated at increments of 30° positions in between, in this mode the drum re-wind facility cannot be used and the winching operation becomes a 2 person operation, one to operate the winch and one to control the rope/cable pulling operation, (in this mode safety and responsibility lies solely with the operators). Always tighten the capstan clamp retaining nut first finger tight using the lugs and secondly fully tighten with a spanner on the hexagonal nut to prevent any movement of the capstan supporting bracket during operation. Refer to Section 8 for details of the location of the retaining pin and R-Clip and the capstan retaining clamp nut. It is the operators responsibility to ensure that the winch is adequately restrained to prevent any movement during the pulling operation.



NB: it may be necessary to remove the lighting board. This is accomplished by first removing the securing padlock and R clip, unplugging the electric's, and then lifting the anti-luce connectors. The complete lighting board can then be removed and stored safely, until required for re-assembly, always ensure that the securing padlock and R clip at fitted on re-assembly.



5.3 PAYING OUT ROPE

- The rope take-up drum should be de-clutched by removing the lynch pin at the end of the drum shaft, (Note;- the lynch pin is a loose item and must be retained in a safe place for re-fitting), grasping the drum flange, pulling and simultaneously rotating. Once the drum is free from its drive clutch, it is free to rotate on the shaft and the rope can be pulled manually from the drum. On completion, the rope drum should be relocated back on to the drum drive screws and the lynch pin correctly re-fitted to prevent the rope take-up drum from sliding off the drum shaft, for further details refer to Section 5.7

5.4 STARTING THE ENGINE

- The engine manufacturers operating and service manual form an integral part of this manual. It is essential that these instructions are read and fully understood by all operating personnel before starting the engine.
- Before starting the engine, check the fuel level, engine oil level and oil level in hydraulic tank, top up if required.
- An Emergency stop push button is fitted to the control panel, it will require re-setting if it has been activated, check the Emergency Stop function prior to the commencement of using the winch for pulling in / paying out.



5.5 PULLING IN

5.5.1 The rope should be wrapped around the capstan such that: -

- a. The rope to take-up drum comes off the top of the capstan and is positioned furthest away from the capstan drive gearbox.
- b. The rope to the fibre cable comes off the top of the capstan, and is nearest to the gearbox side of the capstan. Approximately four to five complete turns are required.



5.5.2 Operate the drum control lever to engage the drum drive (capstan inline with the winch centreline pull mode only). This should be left in its operating position at all times that the winch is working. At all other times it is advantageous to return the drum control lever to its non-operating position.

5.5.3 Operate the winch control lever by pulling gently towards the operator. The rope will now be pulled in and be wound onto the rope take-up drum. The speed of pulling can be increased or decreased by adjusting the engine speed control. The specific pulling tension is adjusted by the operator by turning the tension control knob to suit the application.

When winching is completed, move the take-drum operating lever to the “off” position.

5.5.4 When being used as an assist winch, the drum drive is not required and therefore the operator should ensure that the lever is in the off position. Capstan wrapping of the cable should ensure that the high tension side should be nearest to the gearbox and hydraulic motor.



5.6 REMOVING ROPE FROM SPLIT DRUMS

A split drum can be employed for the recovery of catenary or contact conductors, it been designed to enable removal of the rope in a complete coil.

Assemble the loose drum half to the main split drum hub and secure with the retaining nut, if not already assembled.

Load the split drum into the winch and secure.

Attach a suitable 10m long wire rope around a spoke on the removable drum half adjacent to the drum hub and secure with two rope grips. This will retain the rope to the drum, rotate the drum to allow four wraps prior to attaching the loose end to the conductor with a suitably sized conductor grip (stocking).

The conductor recovery can then commence.

Once the recovery is complete, remove the split drum from the winch. Strap the conductor in three positions (in between spokes of the split drum that will allow the drum to be split) with wire rope to retain in position when released. Remove the two rope grips from the wire rope attached to drum spoke.

Remove the lynch pin at the end of the drum shaft, (Note;- the lynch pin is a loose item

and must be retained in a safe place for re-fitting), remove the split drum from the winch. Attach two ratchet pullers (250kg capacity) at 180 degrees apart around the outer drum rims to retain the load induced by the conductor. Roll the drum over with the retaining nut upper most). The ears on the outer drum flange-retaining nut can now be used to release the retaining nut by rotating counter-clockwise, because of the tightness of the rope on the drum, a soft-faced hammer may be used on the retaining nut ears to help with the initial movement, remove the retaining nut, remove the ratchet pullers to allow the loose drum half to be removed and the retained conductor coil to be lifted out. Re-assemble the loose drum half, fit and secure the retaining nut. Refit the split drum on to the winch and correctly re-fit the lynch pin to prevent the rope take-up drum from sliding off the drum shaft, for further details refer to Section 5.7

5.7 ON COMPLETION OF THE WINCHING OPERATION

- The machine should be wiped down and cleaned.
- The lighting board should be re-fitted and secured, check the operation of the lights.
- The rear prop legs should be raised and secured and the extended prop arms re-positioned to the transit position. See Fig 5.7a



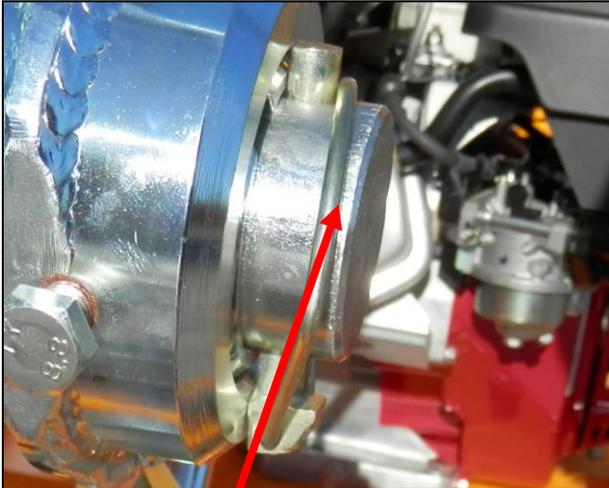
Fig 5.7a

- Always ensure that the rope take-up drum retaining lynch pin is correctly fitted to the drum shaft, (failure to do so may result in the rope take up drum not being completely secured), See Fig 5.7b

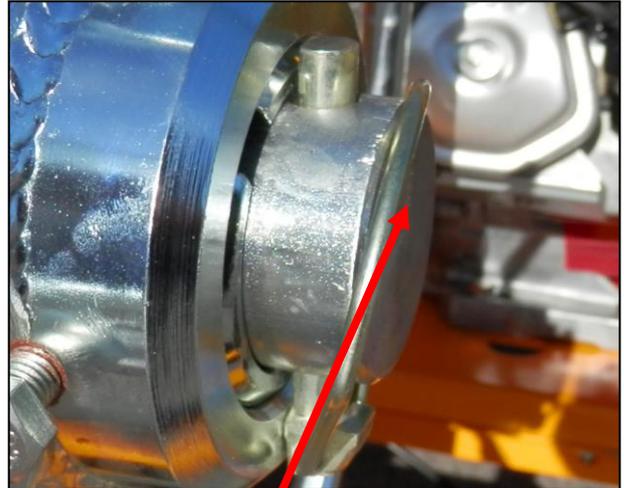


Fig 5.7b

Lynch pin fitted in position
(see below)



Correct:- the spring must
close against the lynch pin



In-correct:- the spring is not
against the lynch pin

- The winch should be preferably stored in a dry place e.g. garage or workshop.

6.0 MAINTENANCE AND SERVICING

IT IS IMPERATIVE THAT ALL PERSONS USING, OPERATING OR MAINTAINING THIS WINCH BE FULLY TRAINED AND COMPETENT TO DO SO, AND HAVE READ THE ENTIRE OPERATING MANUAL.



CBS PRODUCTS (KT) LTD. CANNOT BE HELD RESPONSIBLE FOR MIS-USE OF THIS EQUIPMENT.

IT IS RECOMMENDED THAT THIS WINCH IS SERVICED EVERY 12 MONTHS, REGARDLESS OF ITS CONDITION OR THE NUMBER OF OPERATING HOURS USED. THIS WILL HELP TO ENSURE RELIABLE, TROUBLE FREE SERVICE. IT IS IMPERATIVE THAT ANY MAINTENANCE WORK IS CARRIED OUT BY PERSONNEL SUITABLY TRAINED AND QUALIFIED TO DO SO.



6.1 PRE WINCHING MAINTENANCE CHECK

This should be carried out each day prior to the start of winching.



6.1.1

Check the hydraulic oil level. Oil should be visible within the black lines marked on the hydraulic oil level sight gauge. Replenish if necessary with the correct grade of hydraulic oil to suit the climatic conditions. (Refer to the section 4 for grades of hydraulic oil required?).

6.1.2

Check the engine oil level as indicated in the engine manufacturers manual. Replenish if necessary.

6.1.3

Check that there is enough fuel in the tank to complete the planned winching schedule.

6.1.4

Check the condition of the hydraulic hoses, replace if damaged.

6.1.5

Check the condition of the pulling rope, particularly where it joins the drum. Only use a good condition rope of suitable pulling capacity.



6.1.6

Check that all screw fasteners are tight.

6.1.7

Check the hydraulic oil system for leaks, rectify before proceeding.

6.1.8

Clean any dirt or debris from the take-up drum shaft and capstan face.

6.1.9

Check the tyre condition and tyre pressures, refer to section 4 of details.

MONTHLY MAINTENANCE

This should be carried out at intervals not exceeding 12 weeks. These intervals will depend upon the degree of use of the winch.



6.2.1

Carry out all the pre-winchng checks as detailed in 6.1

6.2.2

Check the function of all the lighting equipment, this should be more frequent if regular problems arise.

6.2.3

With the engine and drum shaft running, check the return filter condition indicator. This is a red/green indicator mounted on the hydraulic oil tank return line filter. If the indicator is well over into the red area, replace the filter.

6.2.4

Grease all bearings and grease points (using the grease nipples fitted).

For example (where applicable)

The rope drum shaft bearing, (remove the cover plate of the drum drive box. Apply a single stroke of the grease gun to the grease nipple mounted on the bearing unit. Replace the cover).

The hydratow coupling

The towing ball cup (if fitted)

The jockey wheel bearing

The capstan support base plate

6.2.6

Oil all moving parts having wiped away all corrosion and dirt deposits.

6.2.7

Apply oil to all oilite bushes.

6.2.8

The brakes fitted are the auto reverse type to make towing easier. The maintenance of the drum brakes should be undertaken by trained personnel only, and adjusted when necessary to ensure the drums just run clear when the wheel is rotated in a forward direction only. It is important to keep these adjusted as too large a drum movement can affect the performance of the auto reverse facility and parking brake. An indication of worn brakes will be given by increased handbrake travel.

After adjusting the drum brakes, remove any slack in the operating system by loosening the lock nut and tightening the pull rod, but without pre loading brakes (check this again by rotating each wheel in a forward direction).

The linkage mechanism should be oiled to ensure smooth operation and to protect from moisture.

Check the condition of the brake cables, replace if frayed or damaged. Apply a light oil as required to ensure cables move freely. Follow brake manufacturers appropriate instructions in this respect.

DO NOT ADJUST FOR BRAKEWEAR ANYWHERE OTHER THAN AT THE WHEEL BRAKE THEMSELVES.

6.3 ANNUAL SERVICING

This should be carried out at approximately 12 monthly intervals by a qualified and experienced workshop team.



6.3.1

Carry out all the work as specified above in section 6.2

6.3.2

Drain the hydraulic circuit of oil. Clean the filler/breather and replace. Renew the suction filter element and return line filter element. Refill with fresh oil. Check and reset all relief valves, (Refer to section 6.4 for further information).

Refer to section 4 for grades of hydraulic oil.

6.5.3

Service the engine as per the engine manufacturers manual supplied with the winch.

6.5.4

Check the condition of the brakes, tyres, and running gear. Adjust and reset if necessary.

6.5.5

Check the condition of the towing breakaway cable. If frayed, kinked or damaged, replace immediately.

6.5.6

In-line planetary gearbox (capstan drive):-

Change the gearbox oil, (refer to section 4 for gear oil grades) refer to the instruction manual supplied with the gearbox for further details on maintenance and servicing.

Please note:-

CBS Products (KT) Ltd. can offer an in house servicing and repair facility. Please contact CBS Products (KT) Ltd. for further information.

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6.4 RELIEF VALVE SETTING

Reference should be made to the hydraulic circuit diagram number C-1045-AS1028 supplied with this manual.

There are four relief valves in the circuit and with the exception of item 8, all have been factory pre-set and should not be adjusted. Item 8 is adjusted by the operator to give a maximum pulling tension.

If it is necessary to replace or adjust any of the relief valves, the following guidance should assist.

Item 6 This is a Capstan directional control valve. The relief valve is mounted in the body of this control valve and is the main system relief valve. With a Dynamometer in the rope load line, and with 4 complete turns around the capstan, this relief valve should be set to relieve at 550 kg, approx. 130 Bar.

Item 7 This relief valve is situated on the drum D.C.V. This controls the rope tension between Capstan10 and Drum when pulling in. The valve should be set to relieve when the rope tension measures approx. 40-50 kg. This measurement and adjustment should be made when the rope drum is almost empty.

Item 2 This relief valve is mounted in an aluminium body connected to the drum hydraulic motor. This valve prevents drum overrun when paying out under power. With the rope drum almost empty, the relief valve can be set so that a rope tension of approx. 40 kg will cause the drum to rotate.

Item 8 This relief valve is again mounted in an aluminium body connected to the capstan hydraulic motor. It is intended that the site supervisor will set this relief valve to give a rope tension to suit specific operating conditions.

7.0 TOWING INSTRUCTIONS

BEFORE TOWING

- a. Check the ball head cup is well greased (if fitted).
- b. The handbrake is fully applied.
- c. Raise the coupling head above height of the ball bracket by use of the jockey wheel provided.
- d. Reverse the towing vehicle until the ball bracket is directly below ball head on coupling.
- e. Grasp the locking handle on top of coupling and press the trigger backward with the thumb. Then lift the handle (you can now release the trigger). With the handle still raised, wind up the prop stand until the ball on the towing vehicle enters the ball cup on coupling. Now release the handle and continue winding up the prop stand until locking handle automatically drops down and the trigger snaps shut. If this does not occur, lift the handle again and check if ball seats this time and trigger snaps shut. If there is still no success, check if ball or head is worn.
- f. If ball seats properly then continue winding up the prop stand until it is fully retracted.
- g. If a towing eye is fitted instead of ball head, remove the pin from towing jaw and reverse the towing vehicle until the eye enters the jaw. Then replace pin and locking pigtail or other securing device.
- h. Continue to wind up jockey wheel until fully retracted and wheel is no longer free to rotate. Loosen jockey clamp and raise jockey wheel up into chassis with wheel facing rearwards and re-tighten clamp firmly ensuring wheel is well clear of brake linkage. If not already raised, raise the prop stand and re-tighten the clamp firmly, ; ensuring the foot is well clear of brake linkage , (if fitted), ensure that the rear props are raised.

If an additional front mounted prop is fitted, ensure it is correctly stowed and secured for towing.

Please remember brake linkage and handbrake must be free to move fully during overrun braking when on the road so that breakaway cable can apply brakes if trailer should part company with towing vehicle.

- i. Check condition of breakaway cable. If frayed or kinked at all replace immediately before use. Then connect breakaway cable to towing attachment on towing vehicle. The cable must be free of knots.
- j. Connect electrical plug to socket on rear of towing vehicle and check all lights are fully operational.

- k. Check the load is distributed to give the correct nose weight for the coupling, refer to Section 4 for information on the hydratow coupling, a positive nose weight is required to ensure stable towing. Also ensure nose weight is within limit of towing vehicle.
- l. If an additional front mounted prop is fitted, ensure it is correctly stowed and secured for towing.
- m. When fitting the number plate, ensure that it is fitted centrally between the rear number plate lamps.
- n. If towing with a car transporter vehicle, or any other vehicle, which has a long rear overhang, extra forces can be applied to the coupling and towing device causing rapid wear and damage. Please consult our Sales Department.

WHEN ON THE ROAD

REVERSING – AUTO REVERSING BRAKES

- a) Simply reverse with towing vehicle having checked all is clear around you. Initial resistance will be felt as brakes are applied on trailer and then automatically 'roll-off', allowing reversing to continue. If reversing a heavy trailer up an incline, or on grass or other slippery surfaces, wheel spin on the towing vehicle may occur, as brakes initially come on.
- b) If so, simply pull forward on to flat surface and recommence reversing operation from there.
- c) If trailer regularly has to be reversed up a steep incline, then an optional manual override for such conditions can be offered.

PARKING – AUTO REVERSING BRAKED TRAILERS

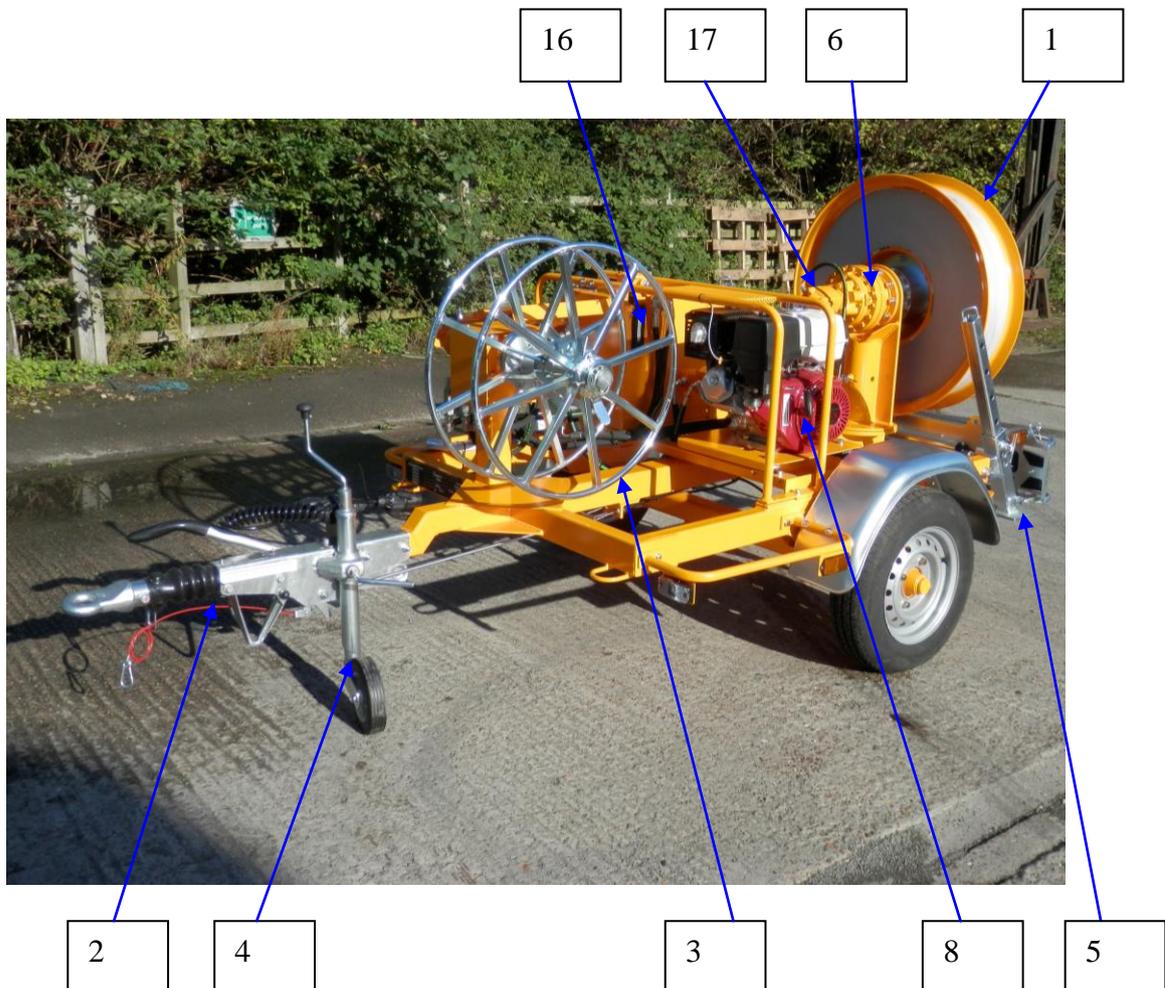
- a) Apply handbrake fully (if energy stores is fitted to rear of coupling then apply further pressure to the handbrake to compress the spring which is fitted within the energy store component). This ensures that should brake roll-off occur when a trailer is parked with the rear facing down an incline that the brakes will automatically be re-applied. Please remember brake linkage must be free to move fully during overrun braking when on the road, also handbrake so that breakaway cable can apply brakes if trailer should part company with towing vehicle. If the unit is fitted with a power assisted handbrake, then no further action is required as the handbrake will automatically take up any further movement should roll-off start to occur when parked on a slope.
- b) Disconnect electrical plug from socket and store in safe position.
- c) Loosen jockey clamp and lower jockey wheel to ground. Firmly re-righten clamp (by hand). Press back trigger with thumb and lift handle on coupling head. At the same time raise front of trailer by use of jockey wheel until head is fully clear of ball on towing

vehicle, if additional front mounted prop is fitted, ensure it is correctly lowered and secured.

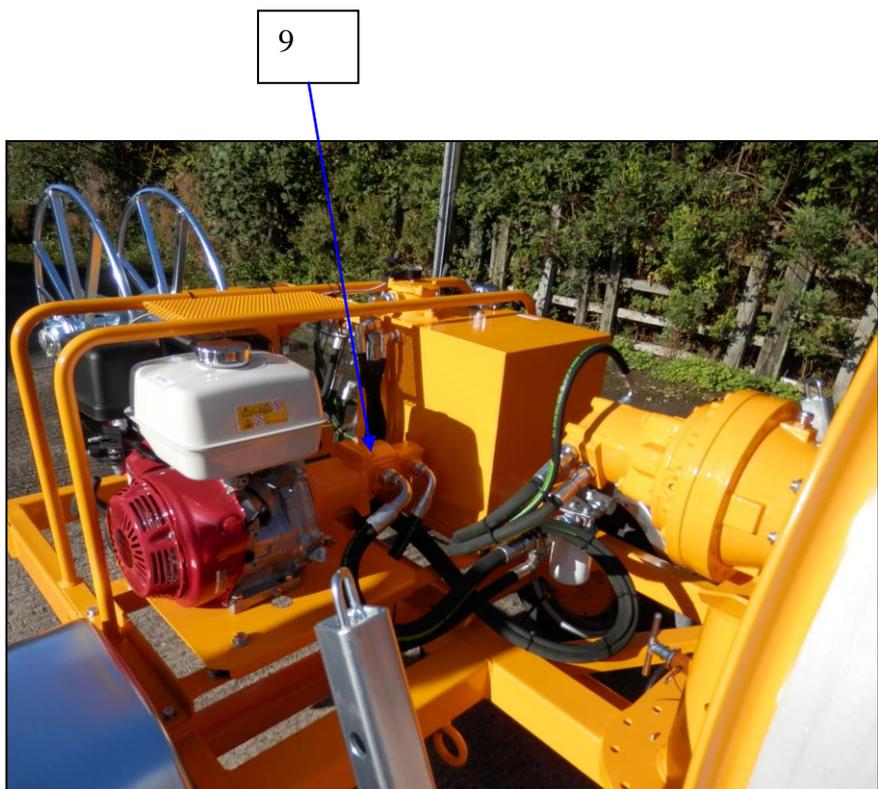
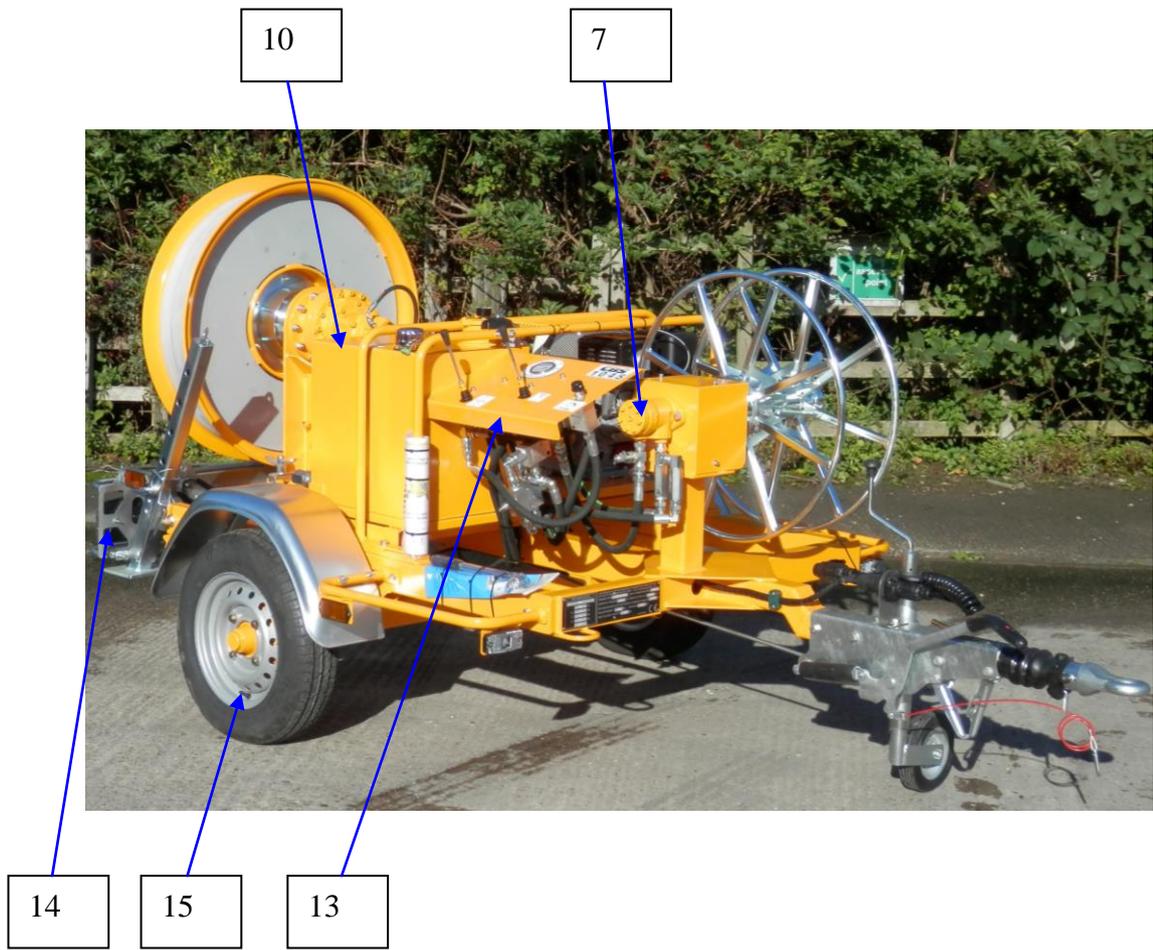
- d) Disconnect breakaway cable from towing vehicle.
- e) Drive towing vehicle clear of trailer. (in the case of a coupling fitted with an eye follow above instructions except in respect of the final disconnecting of the towing vehicle in which case the instructions supplied with the towing jaw or hook should be used accordingly).
- f) As extra security it is strongly recommended that the wheels of the trailer should be chocked as an additional safeguard.

8.0 EQUIPMENT LAYOUT

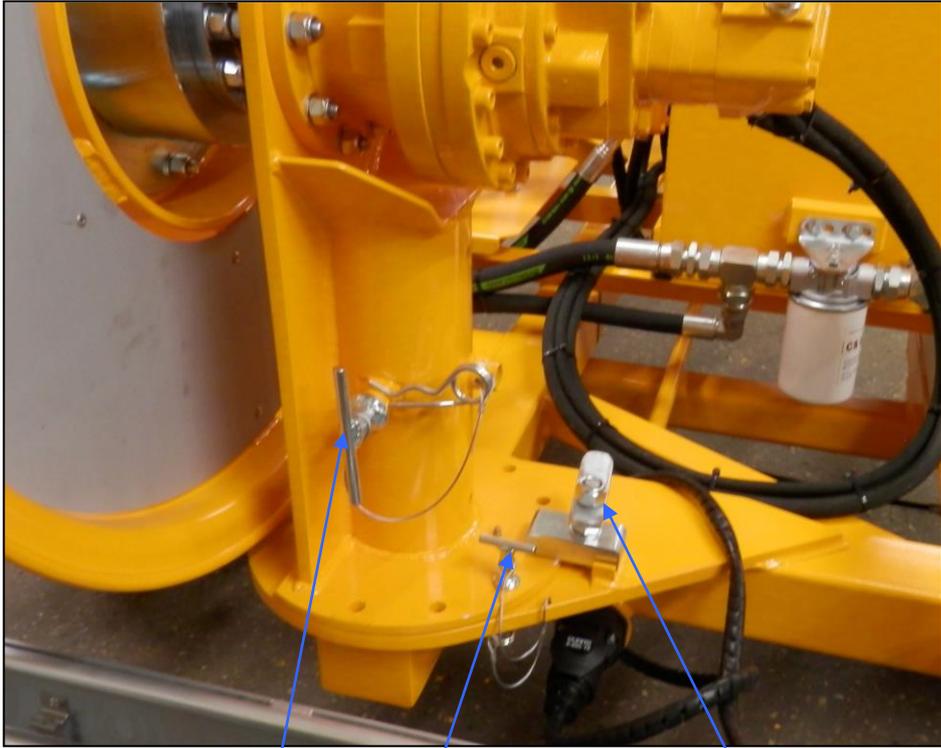
- 1 CAPSTAN
- 2 TOW BAR
- 3 ROPE TAKE-UP DRUM
- 4 JOCKEY WHEEL
- 5 REAR PROP LEG
- 6 CAPSTAN DRIVE GEARBOX
- 7 ROPE TAKE-UP DRUM HYDRAULIC MOTOR
- 8 ENGINE
- 9 HYDRAULIC PUMPS
- 10 HYDRAULIC OIL TANK
- 11 HYDRAULIC OIL TANK FILLER / BREATHER
- 12 RETURN LINE FILTER
- 13 CONTROL PANEL
- 14 REAR LIGHTING BOARD
- 15 AXLE AND WHEELS
- 16 HYDRAULIC OIL SIGHT LEVEL GLASS
- 17 CAPSTAN DRIVE HYDRAULIC MOTOR
- 18 SUCTION FILTER (IN-LINE SPIN ON CANISTER TYPE)



C-1045 CAPSTAN WINCH



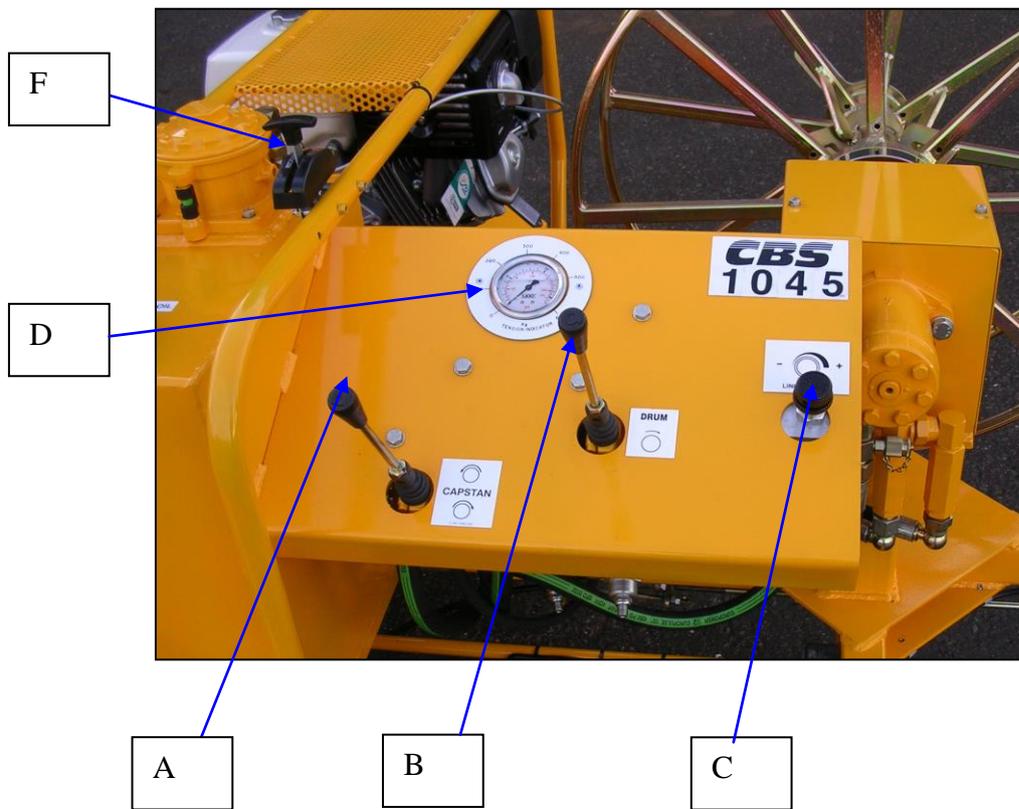




CAPSTAN INTERMEDIATE
POSITION RETAINING PIN

CAPSTAN SUPPORT
BRACKET RETAINING PIN

CAPSTAN SUPPORT BRACKET
RETAINING CLAMP AND NUT



C-1045 CAPSTAN WINCH CONTROL PANEL

- A WINCH IN / PAYING OUT CONTROL LEVER
- B ROPE TAKE-UP DRUM OPERATION CONTROL LEVER
- C CAPSTAN TENSION CONTROL KNOB
- D PRESSURE GAUGE / TENSION INDICATOR
- E EMERGENCY STOP PUSH BUTTON
- F ENGINE THROTTLE LEVER



9.0 SPARE PARTS

For spare parts always quote the model type, VIN (Vehicle Identification Number, located on the chassis frame) and contact:-

CBS PRODUCTS (KT) LIMITED
PILLINGS ROAD
OAKHAM
RUTLAND
LE15 6QF
UK

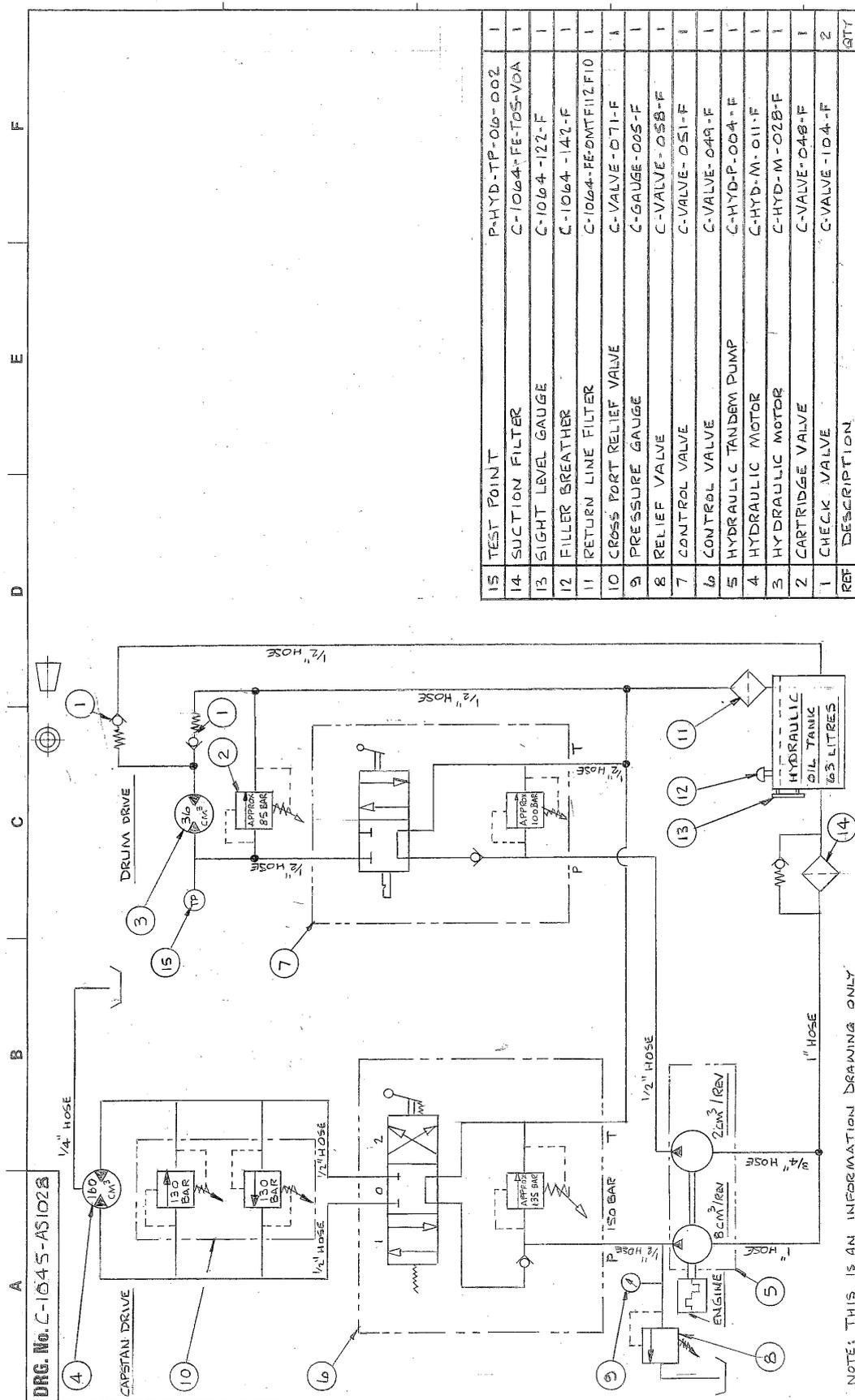
TEL: +44 (0) 1572 723665/6
FAX: +44 (0) 1572 756009

E-MAIL: sales@cbsproducts.com
Website: www.cbsproducts.com

TYPICAL SPARES:

OIL TANK FILLER BREATHER	C-1064-112-F	1 off
RETURN LINE FILTER	C-1064-FE-0MTF112F10	1 off
RETURN LINE FILTER ELEMENT	C-1064-FE-CR112F10R	1 off
SIGHT LEVEL GAUGE	C-1064-122-F	1 off
IN-LINE SPIN ON CANISTER SUCTION FILTER	C-1064-FE-CS05EN	1off

Please give as much information as possible to ensure correct identification and supply of spare parts.



REV.	MODIFICATION	DATE	IF IN DOUBT, ASK!
A	FIRST ISSUE	23-9-14	

GENERAL NOTES

- 1) REMOVE ALL BURRS & SHARP EDGES.
- 2) ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE
- 3)

REF	DESCRIPTION	MATERIAL	FINISH	DATE	CHECKED	DATE	SCALE
15	TEST POINT	N/A	N/A				
14	SUCTION FILTER			23-9-14			N/A
13	SIGHT LEVEL GAUGE						
12	FILLER BREATHER						
11	RETURN LINE FILTER						
10	CROSS PORT RELIEF VALVE						
9	PRESSURE GAUGE						
8	RELIEF VALVE						
7	CONTROL VALVE						
6	CONTROL VALVE						
5	HYDRAULIC TANDUM PUMP						
4	HYDRAULIC MOTOR						
3	HYDRAULIC MOTOR						
2	CARTRIDGE VALVE						
1	CHECK VALVE						
							QTY

DRG. No. C-1045-AS1028

TITLE: C-1045 HYDRAULIC CIRCUIT DIAGRAM

DRG. No. C-1045-AS1028

REV. A

DATE 23-9-14

CHECKED

DATE

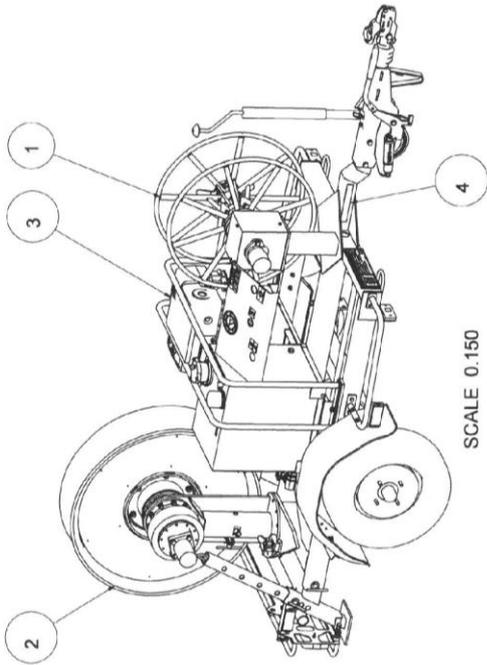
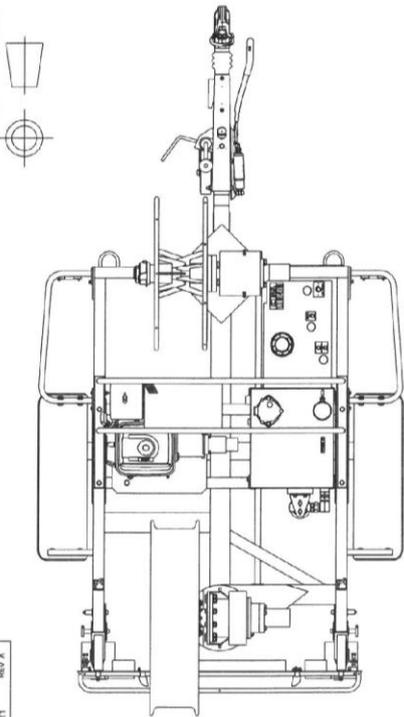
SCALE N/A

THE PAGESETERS

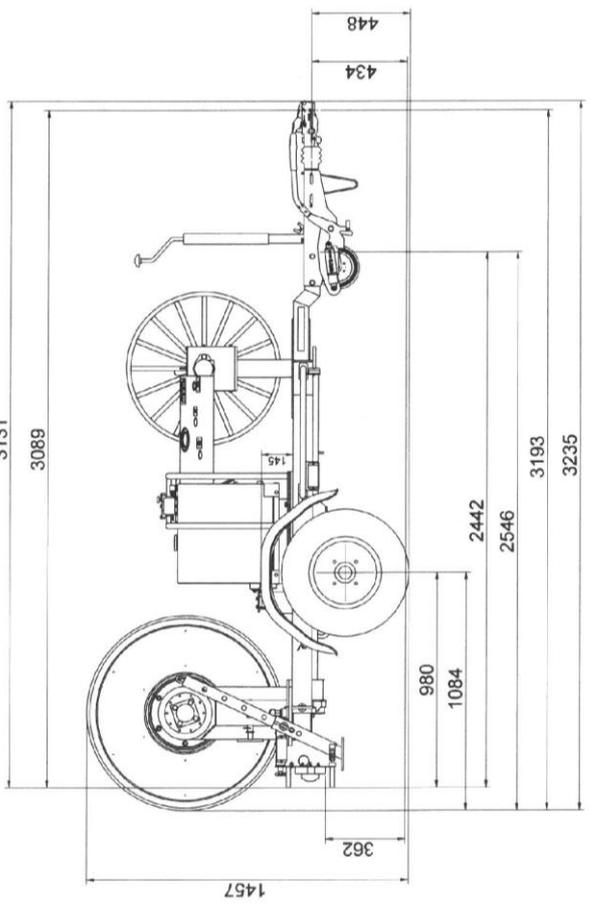
SUPPLIES TO THE TRANSPORT INDUSTRY. DESIGNERS AND MANUFACTURERS OF INTERCHANGEABLE LIFTING EQUIPMENT OVERHEAD LINE TRANSPORTER GEAR, LIFT EQUIPMENT, ROAD TRAFFIC MARKERS

PILLINGS ROAD, OAKHAM, RUTLAND @ COPYRIGHT 2014

DWG. NO. C-1045-AS1055-R1 REV. A



SCALE 0.150



1656 OVER MUDGUARDS

SALES CODE C-1045-001-R4
FOR USE WITH SMART LOAD (NO SUJIE)

ITEM	DESCRIPTION	QTY	TYPE
1	C-1045-AS1055-R1 CHASSIS ASSEMBLY (EEL LOADING)	1	ASSEMBLY
2	C-1045-AS1055-R1 POWER PACK ASSEMBLY	1	ASSEMBLY
3	C-1045-AS1055-R1 MOTOR AND DRIVE ASSEMBLY	1	ASSEMBLY
4	C-1045-AS1055-R1 HYDRAULIC HOSES AND FITTINGS	1	ASSEMBLY

TEMP PART NUMBER	DESCRIPTION	QTY	TYPE
1	C-1045-AS1055-R1 CHASSIS ASSEMBLY (EEL LOADING)	1	ASSEMBLY
2	C-1045-AS1055-R1 POWER PACK ASSEMBLY	1	ASSEMBLY
3	C-1045-AS1055-R1 MOTOR AND DRIVE ASSEMBLY	1	ASSEMBLY
4	C-1045-AS1055-R1 HYDRAULIC HOSES AND FITTINGS	1	ASSEMBLY

ENGINEER	CREATION DATE	SCALE	C. 150
AJM	19-8-17		

DATE	ENG	REV	MODIFICATION
19-8-17	AJM		
19-8-17	AJM		

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DATE	ENG	REV	MODIFICATION
19-8-17	AJM		
19-8-17	AJM		

JOB No.:

CBS PRODUCTS
PULL AND ASSIST WINCH
PART NO. 1045-001-R4
C-1045-AS1055-R1
REV. A

DATE: 19-8-17
SCALE: 0.150

ENGINEER: AJM
CREATION DATE: 19-8-17

SALES CODE: C-1045-001-R4
FOR USE WITH SMART LOAD (NO SUJIE)

ORIGINAL DRAWING SIZE: A3
DO NOT SCALE IF IN DOUBT: ASK

SUPERSEDES DRAWING: C-1045-001-R4

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2. IT IS TO BE KEPT IN CONFIDENCE AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF CBS PRODUCTS.

DATE: 19-8-17
ENG: AJM
REV: A

Leaders in Advanced Cable installation Equipment

EC Declaration of Conformity
In accordance with EN ISO 17050-1:2004

We CBS Products (KT) Ltd
Of Pillings Road, Oakham, Rutland, LE15 6QF

In accordance with the following Directive(s):

2006/42/EC The Machinery Directive

Hereby declare that

Equipment Pull and Assist Winch
Model Number C-1045-001-R4

Has been designed and manufactured to the relevant parts of the following standards:

Ref No.	Title	Edition/Date
BS EN ISO 12100:2010	Safety of machinery – General principles for design – Risk assessment and risk reduction	2010

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications and is in accordance with the requirements of the Directive(s)

Signed by 

Name: Mr Andrew Sibun
Position: Technical Manager
Done at: Oakham, United Kingdom
On: 17 July 2017

Document Ref No.
C-1045/CE

The documentation for the machinery is available from:

Name: CBS Products (KT) Ltd
Address: Pillings Road, Oakham, Rutland, LE15 6QF