CRW 10
CABLE RECOVERY WINCH
SPECIFICATION

UNDERGROUND SYSTEMS
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General Specifications

Description: Hydraulic Cable Recovery Winch

Model No: CRW 10

Winch Mass: 2975 Kgs Incl. Fuel (Excluding Boom Extensions and Bracing Kit)

Length: 4200mm

Width: 2100mm

ENGINE

Diesel Engine: Lombardini LDW 2004CHD. K4B74C1

Cooling: Water Jacket and Air Cooling Fan

Set Engine Speed: 2250rpm

Max Engine Speed: 3000rpm
Silent: No
Starting: Electric 12 Volt Battery
Power kW/HP: 36.6 / 50. B Class @ 3000rpm
Fuel Capacity: 29 Ltrs Diesel Oil c/w Low fuel level float.
Control Panel: Std panel c/w auto shutdown for HET & LOP plus hour run.

**AXLES, SUSPENSION & RUNNING GEAR**

Type: Tandem
Axles: Indespension AX1825083R9P
Wheel Studs: 5 x M16 x 165.1 PCD. Wheel Nut Torque: 115 Nm.
Max Load: 3500Kgs (1750Kgs per Axle)
Wheels: WT034R
Tyres: 750R x 16 C Radial
Tyre Pressure: 60psi
Max Towing Speed: 60 MPH
Tow Hitch: Bradley 3500 Kgs CPLG H355
Max Tow Hitch Load (nose weight): 150 Kg’s
Tow Eye: Bradley 50 mm
Braking: Overrun Mechanical
Tow Height:
WINCH PERFORMANCE

Maximum Pulling Capacity: 10,000Kgs
Winching Speed: Max. 10-12 Mtrs / Min.
Winch Control: Proportional Speed Control

SAFETY

Emergency Stops: 3 off Engine Kill
Hydraulic Interlock: 1 off Hydraulic Cage Guard.
Mechanical Hand Brake: Bradley.
Noise Levels: Average Sound Pressure (Idling) 70.6 dB (A) (Winching) 82.7 dB (A)

Peak Sound Pressure (Idling) 85.7 dB (C)

PRINCIPLE OF OPERATION

The design of the cable recovery winch was based around the safe removal of redundant cable from existing underground ducts in an efficient and economical manner.

It was essential to maintain a stable platform from which to work, to alleviate possible movement of the winch whilst in operation, to produce a winch that was quiet for the possibility of night time working that was fuel efficient and easy to operate with the minimum of walking around the winch.

The result is a winch that has a very quiet operation; the engine is in tick over mode when not winching and is therefore saving fuel and reducing noise, the engine automatically increases speed on demand of winching.
The control panel is positioned on the back rear quarter of the winch allowing good visibility of all operations from the one position; all controls are operated from this one position.

The chassis design is based around structural steel square and rectangular box sections to reduce bending and twisting both whilst on the road, being towed and on site in operation. The choice of a tandem axle arrangement provides greater stability in terms of towing, handling and positioning, large diameter wheels were chosen to facilitate mounting kerbs and verges to position the winch satisfactorily. The upper structure frame is also based around the same materials and is fitted with removable sheet metal panels to both protect the engine, hydraulics, electro-controls etc from the elements and reduce noise.

The chassis is fitted with four hydraulic stabiliser legs that operate vertically on all four corners, these legs are fitted with flexible self aligning feet and have a 16” (400mm) stroke to accommodate uneven ground.
There is also fitted to the front “A” frame a heavy-duty Jockey Wheel assembly that provides ease of alignment to tow vehicles and stability whilst handling.

The substantial tow eye drawbar is mounted to the “A” frame with slightly larger bolts than normal due to the practice of leaving the winch connected to the tow vehicle during winching operations (see notes later).
Winching of the redundant cable is via a large diameter capstan; tension is maintained by powered pinch rollers that are speed linked to the main capstan and automatically adjusted to varying diameters of cable. The pinch rollers also have a hydraulic ram that allows the operator to open and close to provide access when inserting cables at the beginning of operations.

The main capstan and pinch roller assembly is covered with a one piece lift up safety cage that has fitted to it an electrical interlock stopping operation of all hydraulics when the cage is lifted, hydraulic operation cannot be resumed until the cage is lowered and then the hydraulic reset button on the control panel operated. The interlock mechanism is in fully coded pairs to avoid bypassing by the use of magnets or similar.

The winch is also fitted with hydraulic power takeoffs at the front and rear of the winch to allow connection and operation of hydraulic cable cutters simultaneously with winching. Operation of the cutter circuit is controlled from the main control panel. Only one takeoff should be used at a time, the system is not designed to run two pieces of equipment at the same time.

The process of cable recovery is generally in relatively short lengths, typically 150-180 mtrs, recovery speeds can vary depending on a number of factors but typical times for a recovery run can be from 15 mins – 45 mins; therefore exposure times to any noise produced were considered. Typical shifts may produce anything between 4-6 pulls, exposure to low-level noise is minimised.

The quantity and positioning of the Emergency Stops was paramount, a total of THREE are provided. ONE is placed on the main control panel and then ONE at each end of the winch, in the same area as the connections for the hydraulic cutters. The E Stops are working on a normally closed circuit; any break in the wiring causes the stops to operate. The stop method is by solenoid fuel stop, which gives exceptionally quick operation.
The safety cage has openings at each end to allow recovered cable into the capstan and at the other end to allow cable out of the pinch rollers, these openings are to the minimum needed for operation. **Personnel should not reach or lean into these openings whilst the engine is running. Serious injury or death could occur.**

The size of the exit opening has been based on the winch being towed by a vehicle with NO OVERHANG at the rear i.e. the tow hitch is level with the back of the body, this allows cable to be propelled onto the back of a suitable lorry without compromising the guard. **NOTE** if it is intended to use a vehicle with a body overhang modifications may need to be carried out to the cage guard. Please seek design advice from Underground Systems Limited on this.