Yale®

PUL-LIFT

Ratchet lever hoist

Mod. C 85 with roller chain
Mod. D 85 with link chain

Maintenance manual

Version 12-2016
(Additional to the operating manual)

Concern the hoists:

D85 - 6000kg - Référence AEROD85x-6Txx
C85 - 3000kg - Référence AEROC85x-3Txx

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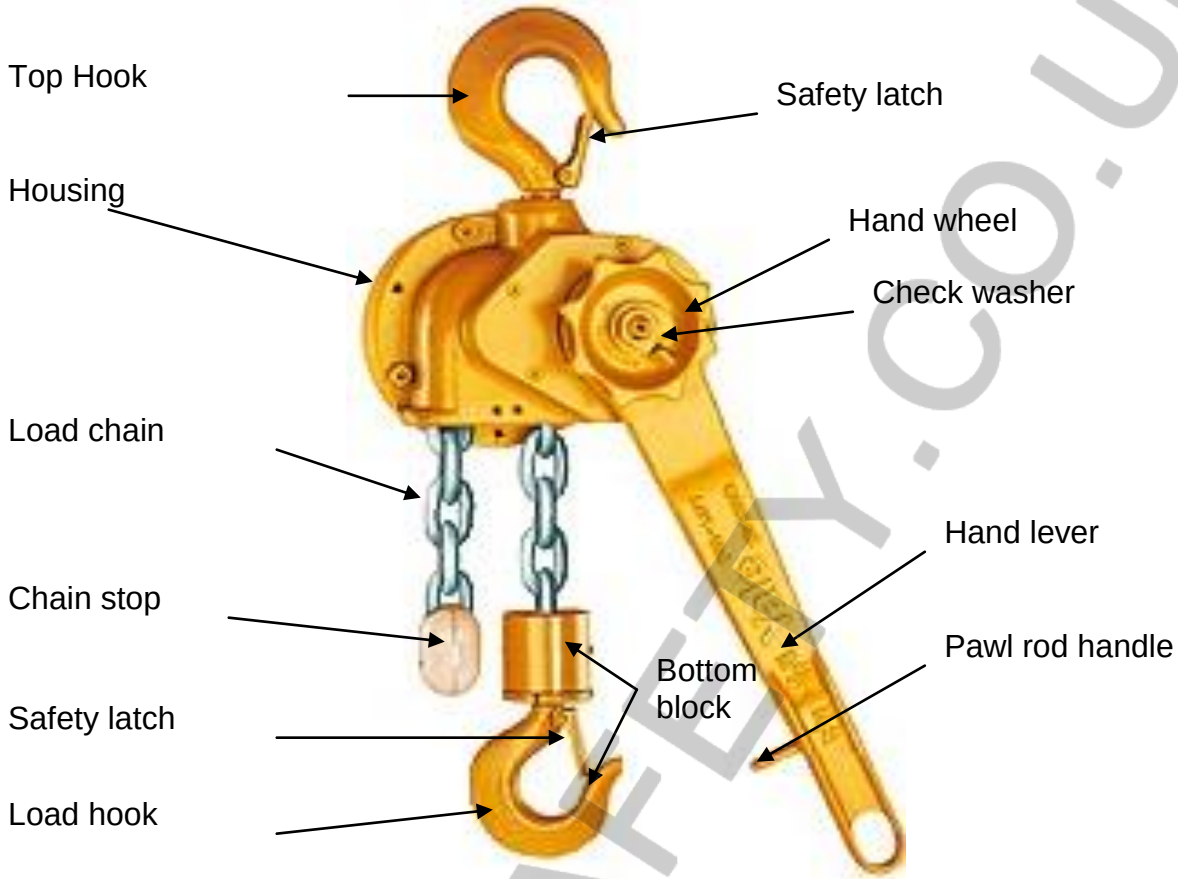
Appareils de levage FRANCE
COLUMBUS McKINNON
CORPORATION

Yale PUL-LIFT, hoist with ratchet drive lever, C/D85 type

Technical features :



Technical features	D85 type with links chain		
Capacity	[kg]	3000	6000
Standard lift	[m]	1,5	1,5
Number of chain falls		1	2
Chain length	[m]	1,8	3,6
Chain dimensions	[mm]	11 x 31	11 x 31
Length between hooks	[mm]	401	532
Lever length	[mm]	570	570
Hand pull at rated load	[daN]	40,7	42,9
Net weight at standart lift (1,5m)	[kg]	19,6	32,9

Technical features	C85 type with rollers chain		
Capacity	[kg]	3000	6000
Standard lift	[m]	1,5	1,5
Number of chain falls		1	2
Chain length	[m]	1,8	3,5
Chain dimensions	[mm]	1 1/4"x5/8"	1 1/4"x5/8"
Length between hooks	[mm]	389	532
Lever length	[mm]	570	570
Hand pull at rated load	[daN]	40,7	42,9
Net weight at standart lift (1,5m)	[kg]	19,6	32,9

Yale PUL-LIFT, hoist with ratchet drive lever, C/D85 type

Summery

1. Introduction

In order to make sure that the hoist unit is in a good working order, a complete inspection must be carried out every six months. This inspection is designed to check that the unit is in a proper state and to detect any damage that could bring the unit to a dangerous situation.
This control will concern the following points:
- The brake unit,
- The hoist pulley blocks (if fitted),
- The load chain,
- The hand lever,
- The load hook and the the top hook.

This control includes a detailed visual control complemented with a functional control.
In case of no proper use or if signs of component failure occur, the unit must been brought back to the manufacturer, or to a specialist workshop, that uses original Yale spare parts.

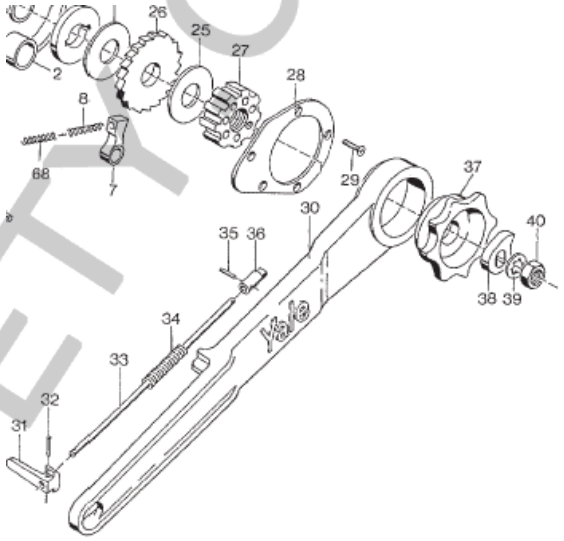
DETAILED INSPECTION PROCEDURE OF THE UNIT

2. Inspection of hoist body

This first step means checking the condition of the braking parts.

- Make sure the brake is not jammed. In case of jammed brake operate hand lever (lowering position) to unjam brake.
- Remove nut 40.
- Remove lock washer 39.
- Remove check washer 38.
- Remove hand wheel 37.
- Remove hand lever 30.
- Remove top 28.
- Remove ratchet 27 by turning it anticlockwise.
- Remove first friction disk 25.
  <u>One must check that :</u>
  - The disk is not glazed.
  - The disk is not spoilled with oil.
  - It is better to replace it chen controlled (safety measure).
- Remove ratchet disk 26.
- Remove and check second friction disk. Same checking as for the first disk.
- Check driving disk 24. No superficial crack must be seen and its surface must be clean.
- Check condition of springs 68 and 8.
- Check condition of ratchet 7.
- Check all pieces good condition.
- Replace all defective parts with Yale spare parts only.

Note: marks may change according with each hoist type. See attached exploded view to each hoist.

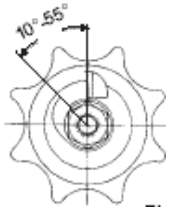


<u>Pic. 1</u> : C/D 85 exploded view

Reassemble brake unit: use dismantling reverse order.

<u>Brake adjustment :</u>

- Put properly in place hand wheel 37.
- Put properly in place brake checkwasher 38. Respect an angle between **10° and 55° max** (this adjustment relies on hand wheel position).
- Put again in place lock washer 39. Replace it with a new original Yale part.
- Put back nut 40 and tighten it.



<u>Pict. 2</u> : brake adjustment

3. Inspection of load hook bottom block

(Concerns only 6000kg hoists fitted with bottom blocks)

Visual inspection

- Presence of cracks
- Unusual wears.

4. Inspection of hoist hooks

4.1 Inspection of the unit top hook
(or inspection of the suspension part, only in case of hoist fitted with a spindle)

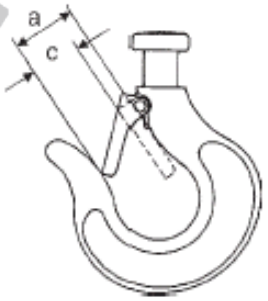
Visual inspection

- Check that the hook undamaged :
  - Warpings,
  - Marks of torsion,
  - Cracks,
  - Presence of the safety latch. Check that the latch is in good condition.
  - Check opening space : see « Checking hooks table » below.

4.2 Inspection of the bottom hook

Visual inspection

- Check that the hook undamaged :
  - Warpings,
  - Marks of torsion,
  - Cracks,
  - Presence of the safety latch. Check that the latch is in good condition.
  - Check opening space : see « Checking hooks table » below.



Pict. 3 : Checking hook space

Checking hooks table
Marking on the hook: TY

Capacity (kg)		3000	6000
c (mm)		35	46
a (en mm)	Nominal value	44	57
	Max value	48.5	62.2

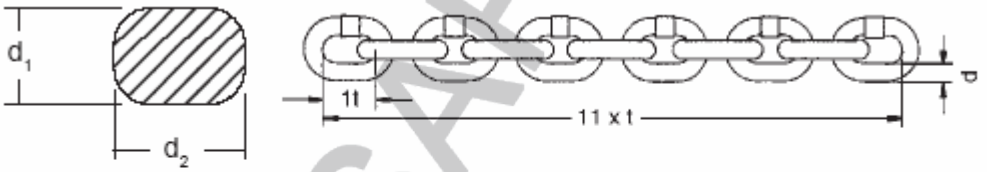
5. Inspection of load chain

Visual inspection

- Clean chain if necessary (use solvent) before inspection. (Important: never use an hygrogen-based product, **very strong, may damage the chain mechanical characteristics).**
- Release chain and inspect all points of contact between 2 surfaces in order to detect excessive wears.
- Inspect the whole chain carefully to detect any possible flaw:
  - Slots,
  - Gougings,
  - Welding projections,
  - Corrosion marks,
  - Bended links,
  - Control chain : use below table.

Pict. 4 : Wear of a chain

D type Hoist



d = Chain nominal thickness

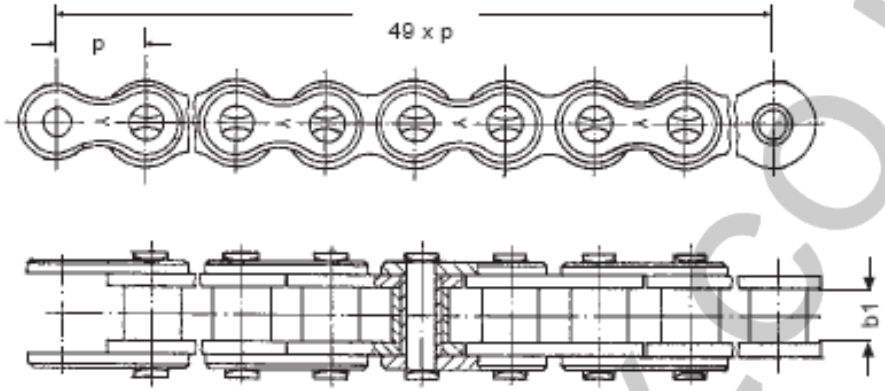
d_1, d_2 = Measured value

$$dm = \frac{d_1 + d_2}{2} \geq 0{,}9\ d$$

Pict. 5 : Links chain

D85	3000Kg	6000Kg
Links chain	11 x 31	11 x 31
Norm. thickness. D Norm . mm	11	11
Nomi. thickness. D mini. mm	9,9	9,9
Inside link t Norm. mm	31	31
Inside link t Max. mm	32,8	32,8
Lenght Maxi 11 t Norm. mm	341	341
Links chain	351,7	351,7

C type Hoist



Pict. 6 : Rollers chain

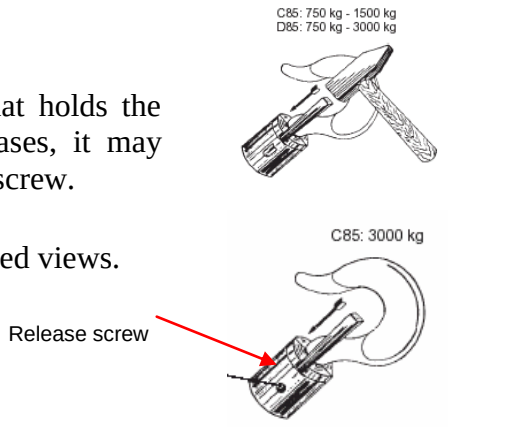
C85	3000Kg	6000Kg
Rollers chain	$1^1/_4$" x $^5/_8$"	$1^1/_4$" x $^5/_8$"
Dist. between axes. P Norm. mm Dist. Between axes. P Mini. mm (+3%)	31,75 32,7	31,75 32,7
Internal width b1 t Norm. mm	16	16
Length 49 p Norm. mm Length 49 p Max. mm (+3%)	1555,8 1602,4	1555,8 1602,4

Chain replacement :

The load chain must be changed as soon as a defect is to be seen.

- Démontage du crochet de charge :

  - Place the hook fitting unit in a vice.
  - Using a flat shape tool, drive out the latch that holds the bush (opposite side of the hook). In some cases, it may happen that it is necessary to remove the fixing screw.
  - In order to dismantle the hook, remove the bush.
  - See opposite sketches and corresponding exploded views.



Pict. 7 : Dismantling of the hook

- Hook reassembly :

  - Replace defective parts and reassemble parts (use dismantling reverse order).

- Replacing the chain :

  - Remove stop chain off the in-place chain.
  - Put the new chain in place. Conform to the position of the hook on the right fall. Mind the chain assembly direction.
  - Put the new chain stop in place.
    IMPORTANT : **The links welding must appear on the external side of the hoist**.
  - Concerning hoists fitted with a bottom block : do not twist chain

Pict. 8 : Replacement of the chain

6. Detailed control of the hoist

See attached exploded view, corresponding to the concerned hoist type (C/D 3000 6000kg)

- Open the body of the speed reducer.
- Check all parts, gear wheels, gears, bearings.
- Lubrication: IMPORTANT NOTE : use only high temperature grease. **(CMCO recommends: "GLEITMO 805").**
- Reassembly the whole unit by conforming to the order indicated on the related exploded view (see Pict. 1)

7. No load testing

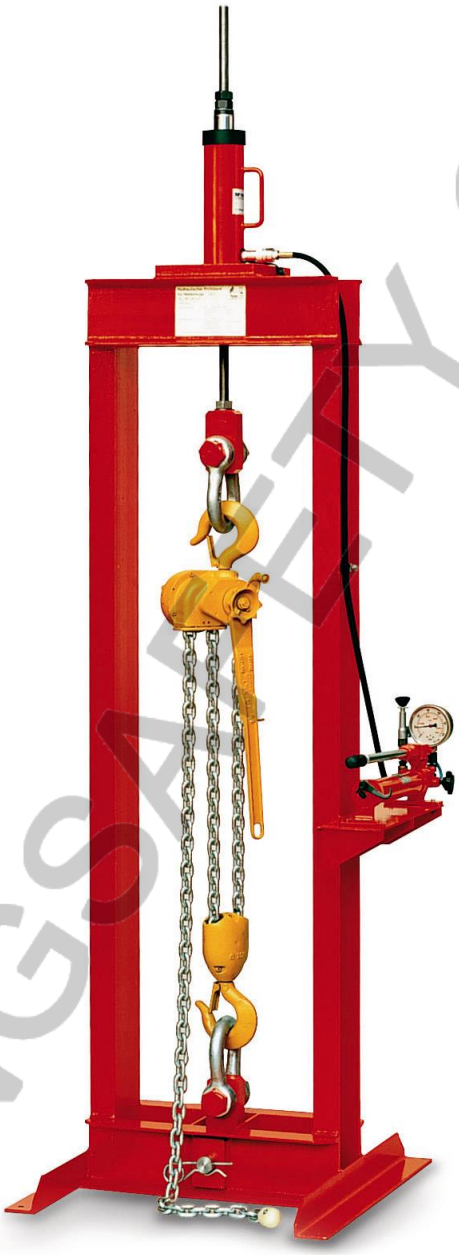
Test the hoist without load:
- Watch carefully that the chain correctly goes on the sheaves.
- The chain must go regularly, in a gentle way, jolt free.

8. Running tests

Test the hoist at 100% WLL:.
- Watch carefully whether the chain correctly goes on the sheaves.
- The chain must go regularly, in a gentle way, jolt free.
- Make sure that the identification sheet and the load sheet are well in place

9. Static test

Carry out a static test up to 150% of the unit rated load.



IMPORTANT NOTE : to ensure that the hoist remains in safe working order, all control or repairing operations must be carried out by competent persons. Use only original Yale spare parts.
(See annex document : spare parts hand books).

Yale PUL-LIFT, hoist with ratchet drive lever, C/D85 type

RECORDING OF PREVENTIVE MAINTENANCE

Model device	Design features	Serial number	First day on service

Date of control	Operator's name	Detail of work carried out	Running tests	Notes