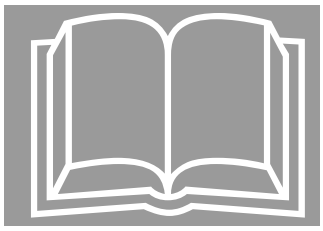
APRIL 1, 2012

UNITEC® PARTS COMPANY

INSTALLATION PROCESS MANUAL

UT-ID 30.2.0



Instructions for Inspection and Repair of Gear Case Drive Sprocket

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Description

1. List of Tools and Parts

	Estimated Field Hours	Material
Machine Replacement	8	New machine ECW1 - refer to Mod package GAA27079M from Breclav - CE (for units with 800mm and 1000mm step) or new EC-H3 Gearbox
Gearbox Replacement	10	New Gearbox EC-H3 (always for units with 600mm step, for outdoor package and for 800mm step with VF Drive)
Reaming	10	2 pcs 12mm solid pin + 1 pc 12mm C-pin
C-pin Replacement	9	3 pcs 12mm C-pin

	Material specification
Solid Pin	Part No. 0455 (12.3 m6 similar to ISO 2338 made from mild steel e.g. C45K)
C-pin	GAA20401C851 (PIN 6x50 ISO 8752)
MOD PACKAGE	
Main drive Chain	GO332P40
Holder	CEA180BCM1; NCE180CTR1

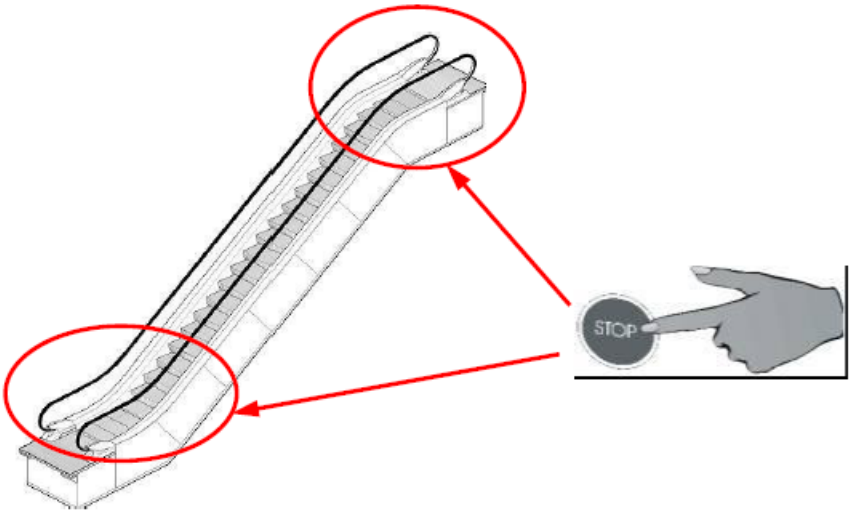
	Tools	Part number
Preparation	Standard Service Tools	
	Floorplate Lifting Device	GAA27BW1
	LOTO Equipment	
	Camera	
	Set: Allen key (10mm needed)	GAA20401B770
	Mirror	
	Flashlight	
Machine Removal	Assembly Stand	GAA20401B773
	Lifting Device (Machine weight = 310kg)	GAA20401B774
	VLBG Load ring M12 or M10 for machine	
Machine Replacement	-	
Reaming C-pin Replacement	Three or two arm pull-off device	
	Reamer 12.3 H7	
	Tap Wrench (suitable for reamer)	
	Suitable cutting oil (e. g. ARECAL)	
	Torque wrench (50-200 Nm)	GAA20401B771
	Marker for sprocket (e.g. Edding)	
	Puncher with diameter 12mm	
	Loctite 234	
	Brush	
	Pliers for handling 12mm pin	
	Hammer (recommended is 600-800 gr) copper or brass	
Machine Installation	Use the same tools as for removing	

TIGHTENING TORGUE - Metrical thread — Torque in Nm acc. to ISO 898/1

	Quality grade								Quality grade						
Thread	**3.6**	**4.6**	**4.8**	**5.8**	**8.8**	**10.9**	**12.9**	**Thread**	**4.6**	**4.8**	**5.8**	**8.8**	**10.9**	**12.9**
M1.6	0.05	0.065	0.086	0.11	0.17	0.24	0.29	**M14**	48	58	80	128	181	217
M2	0.10	0.13	0.17	0.22	0.35	0.49	0.58	**M16**	74	88	123	197	277	333
M2.2	0.13	0.17	0.23	0.29	0.46	0.64	0.77	**M18**	103	121	172	275	386	463
M2.5	0.20	0.26	0.35	0.44	0.70	0.98	1.20	**M20**	144	170	240	385	541	649
M3	0.35	0.46	0.61	0.77	1.20	1.70	2.10	**M22**	194	230	324	518	728	874
M3.5	0.55	0.73	0.97	1.20	1.90	2.70	3.30	**M24**	249	295	416	665	935	1120
M4	0.81	1.10	1.40	1.80	2.90	4.00	4.90	**M27**	360	435	600	961	1350	1620
M5	0.60	2.20	2.95	3.60	5.70	8.10	9.70	**M30**	492	590	819	1310	1840	2210
M6	2.80	3.70	4.90	6.10	9.80	14.0	17.0	**M36**	855	1030	1420	2280	3210	3850
M8	-	8.80	10.50	15.0	24.0	33.0	40.0	**M42**	1360	-	2270	3640	5110	6140
M10	-	17.0	21.0	29.0	47.0	65.0	79.0	**M45**	1690	-	2820	4510	6340	7610
M12	-	30.0	36.0	51.0	81.0	114.0	136.0	**M48**	2040	-	3400	5450	7660	9190

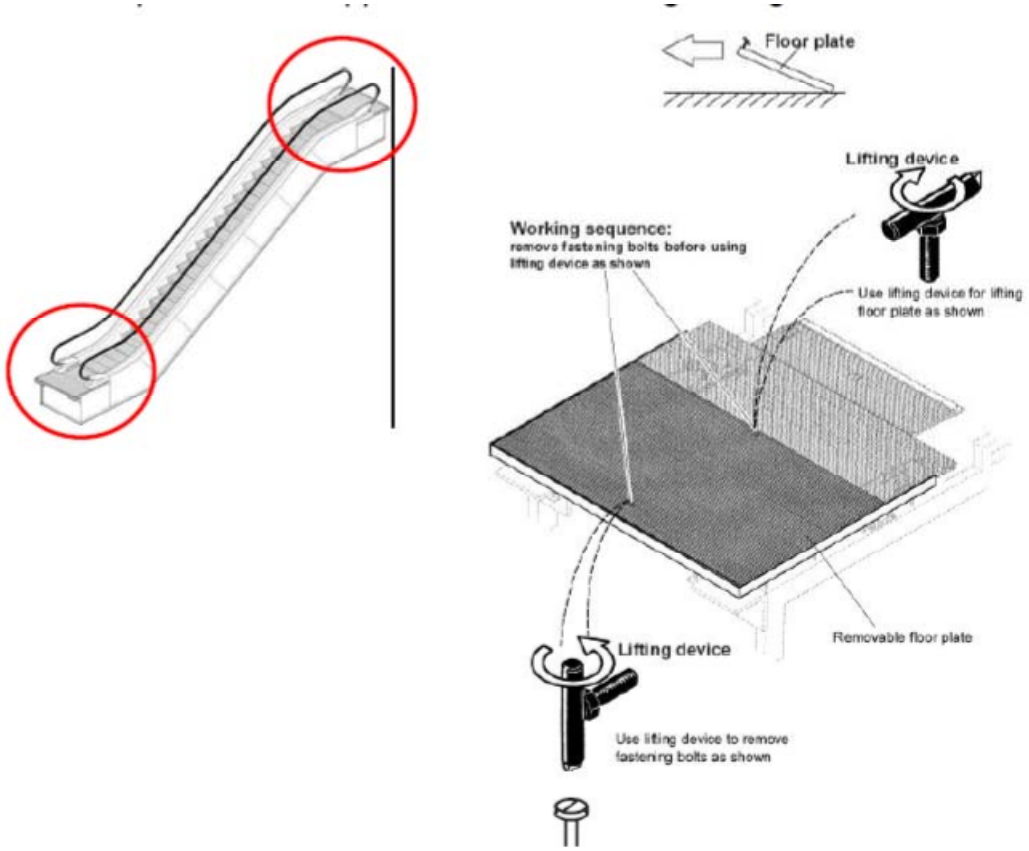
2. Safety Measurements Preparation

NOTE: The application and adaptation of this operating instruction to the specific conditions of the site are under control of the local field organization. All jobsite work activity must be in full compliance with Otis World Wide Jobsite Safety Standards (WWJSSS). When carrying out this procedure particular consideration should be given to control of the escalator, ensuring public safety (signs and barriers) and working in close proximity of unguarded rotating equipment. The mechanics carrying out the task must complete a JHA to familiarize themselves with the work environment and the task at hand. If unsure of the WWJSSS standards in regard to the work task at hand, immediately stop work and refer to the supervisor.

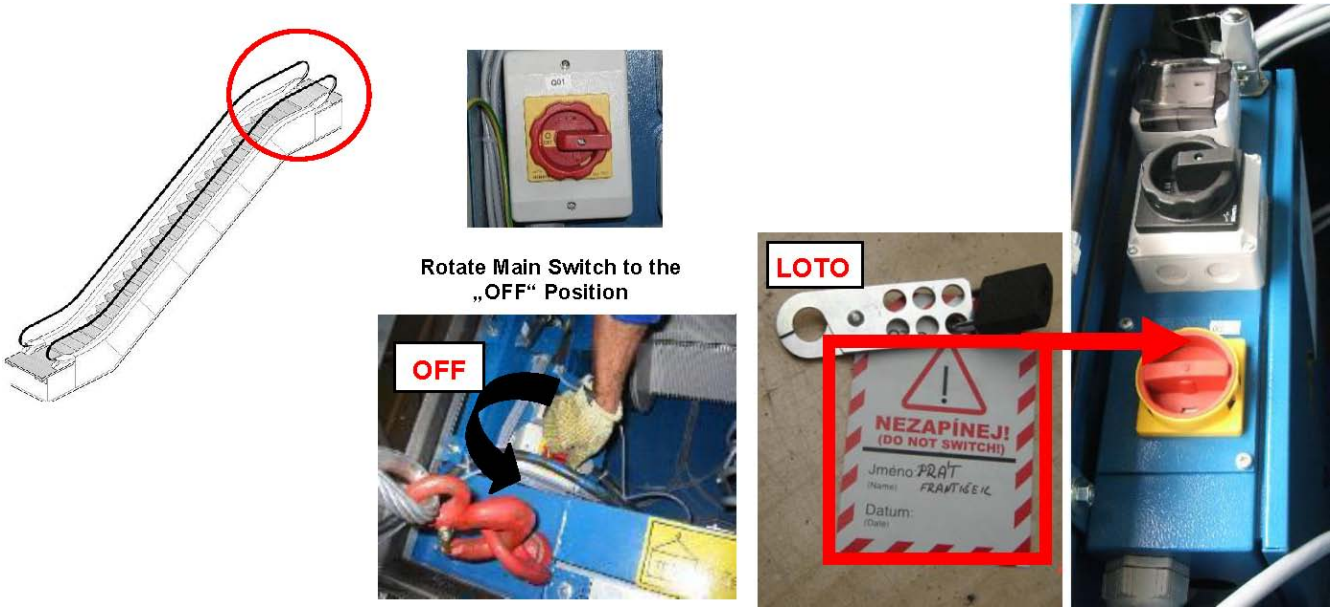


2.1 Block upper and lower landings with OTIS barricades.

2.2. Remove the floor plates in the upper and lower landings using tool GAA27BW1.



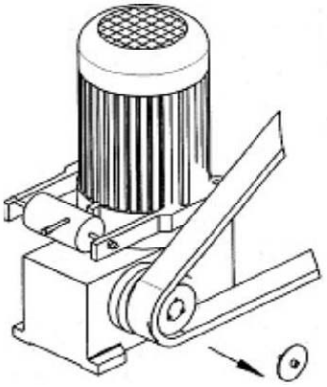
2.3. Switch off main switch inside the upper landing and secure main switch by “LOTO”.



3. Verify the date of product of used machine

Check the delivery date on the machine placed in upper landing, on plate shown on picture below.

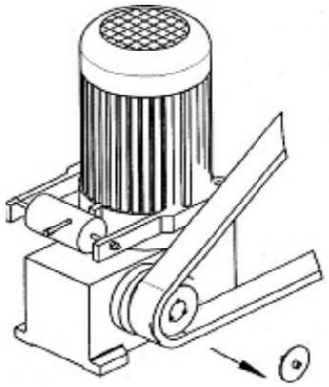
3.1. If the delivery date is **before March 2007**, check condition of shaft and pins
Use a 10 mm Allen head key (GAA20401B770) to remove the retaining plate from the end of the shaft.



…and check by using of mirror if there is brown dust or broken spiral pins.

3.2. If the delivery date is in **March 2007,** continue to check pin used in machine.

3.2.1. Use a 10 mm Allen head key (GAA20401B770) to remove the retaining plate from the end of the shaft.



3.3. If the Delivery Date is **after March 2007**, there is no action required.

If not:

3.3.1. Check used pins by mirror and flashlight according to this document.

In cases when the ø12 mm C-pin are inserted, no corrective actions necessary. Mount retaining plate back to shaft.

A.

3.3.2. If one of following situations happens, continue this procedure.

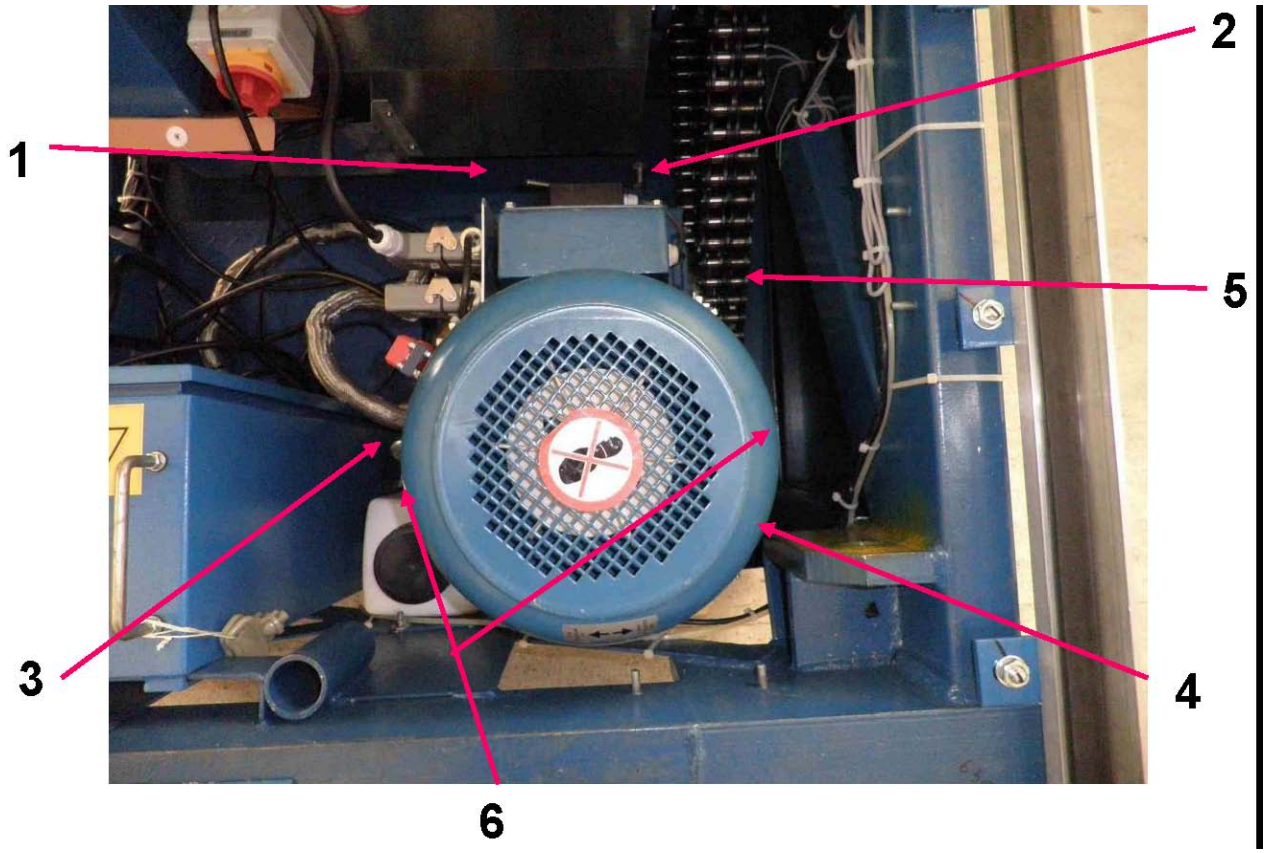
B) Spiral pin with ø 6 mm C-pin

OR

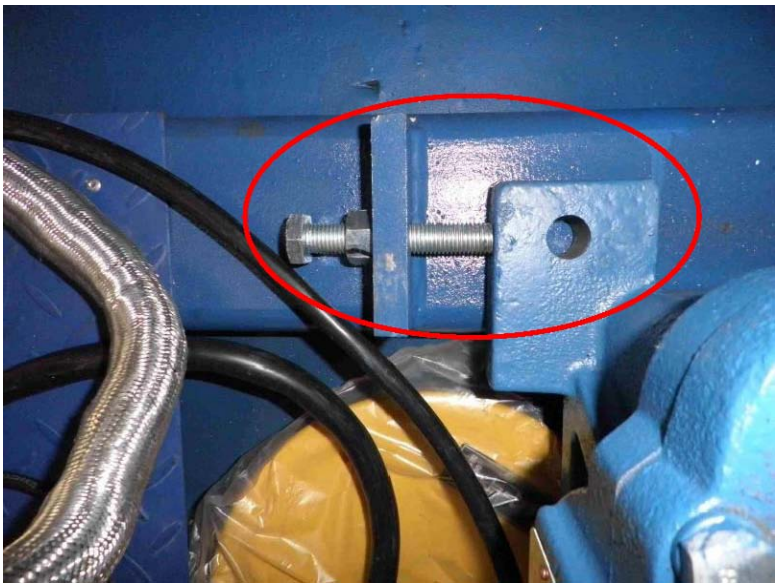
C) Spiral pin in good condition

D) Broken spiral pin

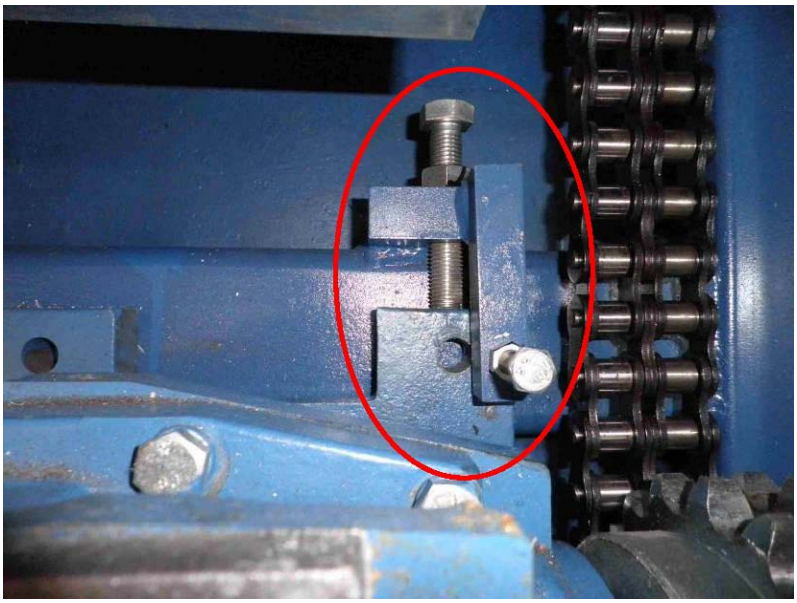
4. Remove motor with gear box (weight: 119 kg) – follow the step numbers.



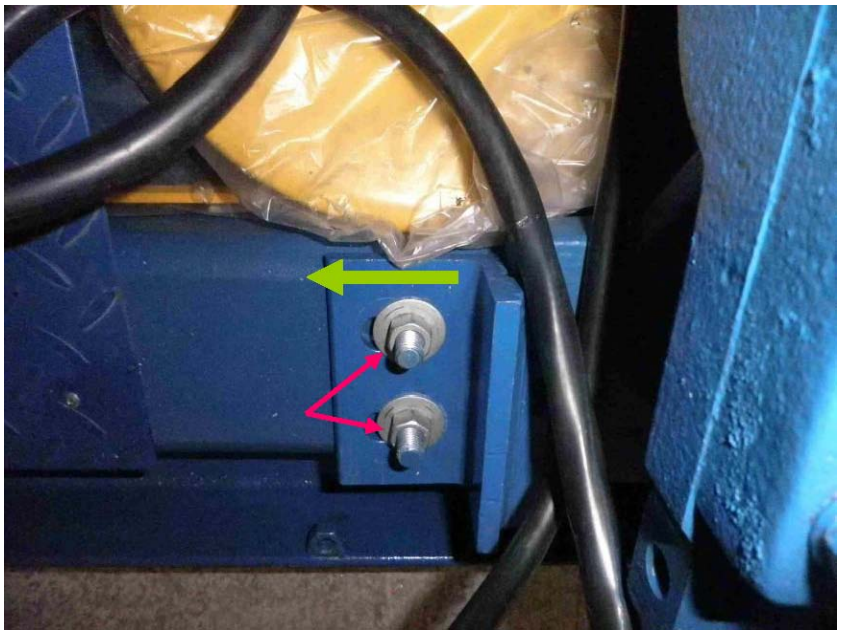
Step 1: Loosen up screws at the back side of machine holder on the left hand side.



Step 2: Loosen up screws at the back side of machine holder on the right hand side.

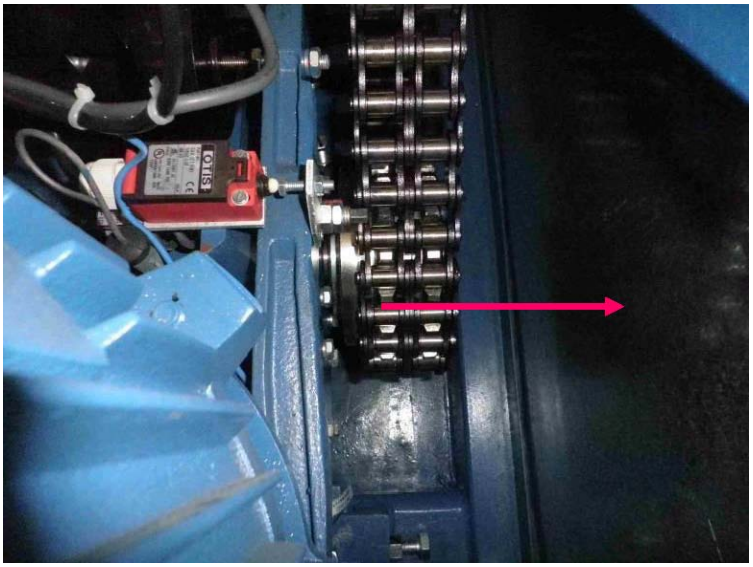


Step 3: Loosen up bolt nuts on machine holder at the front left side and shift the holder aside (see green arrow).

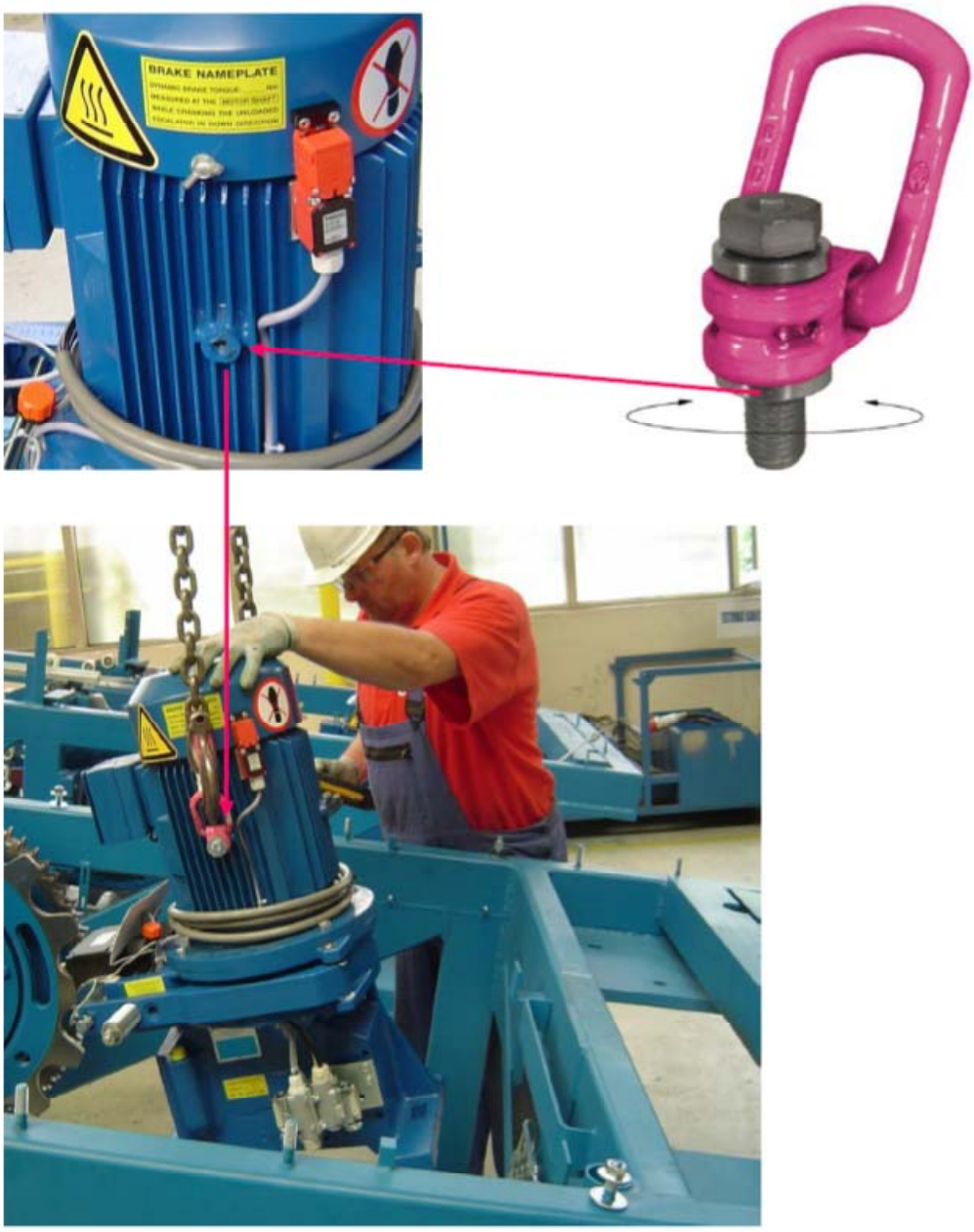


Step 4 Loosen screws at the front side of the machine holder on the right hand side.

Step 5 Lift down the main drive chain from the machine rosette.



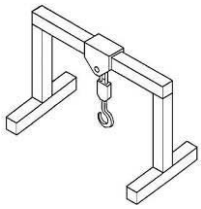
Step 6: Screw the lifting eyes on the machine and pull it carefully out by a lifting device from the unit.



4.1. Remove the main drive chain.

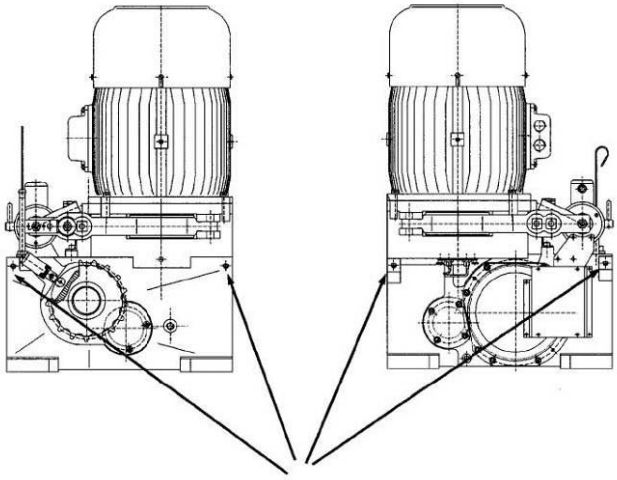
4.2. Disconnect the wiring of the motor.

4.3. By means of a lifting device, the complete machine can be lifted vertically out of machine room by assembly stand (GAA20401B773) with lifting device (GAA20401B774).



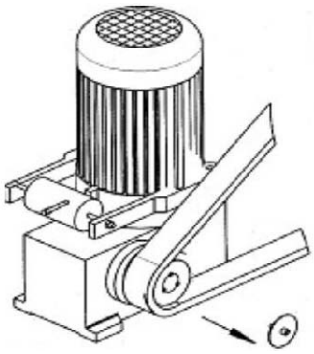
4.4. Lifting device has to be hooked in 4 eyebolt (RUD) in the 4 holes on the side of the gearbox (see drawing). Only with this 4 bolts lift the machine.

4.5. Stored machine vertically upright at a convenient place (wooden plate).



holes for the eyebolts (RUD)

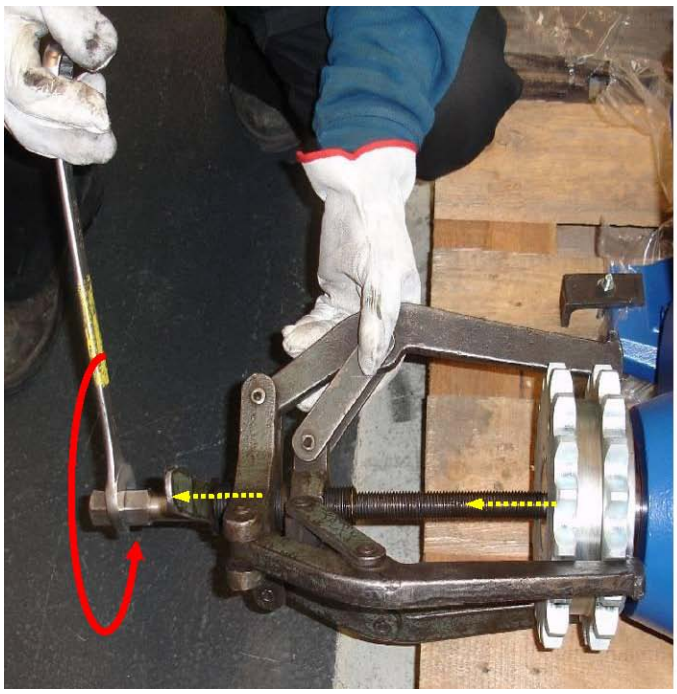
4.6 Use a 10 mm Allen head key (GAA20401B770) to remove the retaining plate from the end of the shaft.



5. Dismounting of Sprocket

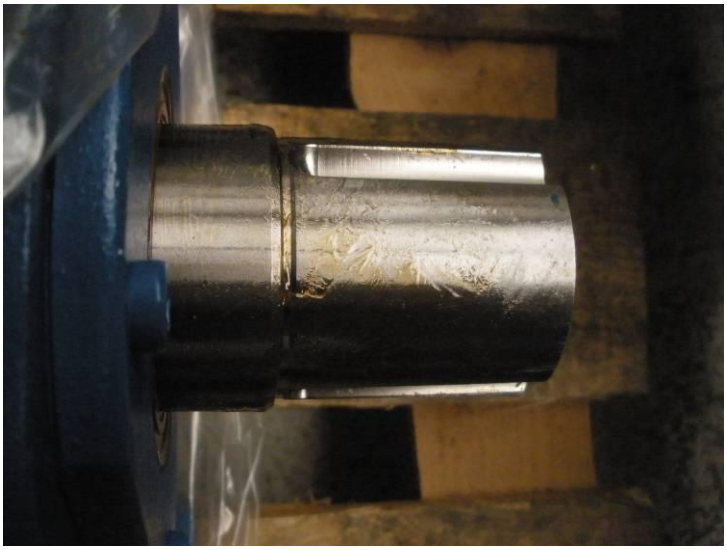
5.1 Mark the position of the sprocket relatively to the shaft in circumferential and lateral direction.

5.2 Remove sprocket from shaft by three-arm pull-off device or two-arm pull-off device by spanner.



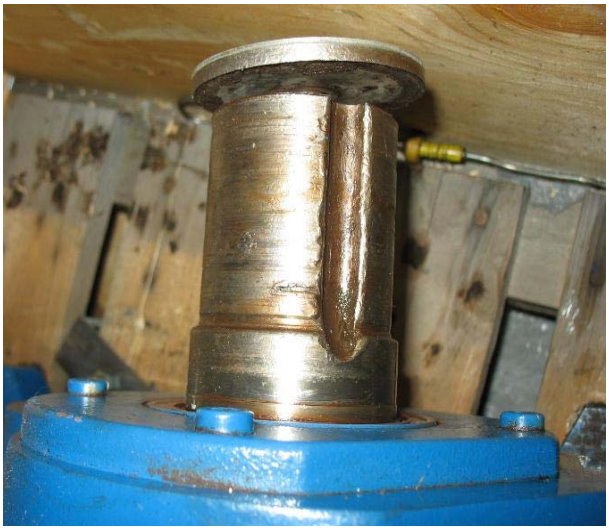
5.3 Check surface condition of sprocket and shaft.

A) If is the surface in good condition, no damage or slightly scratches from dismantling or broken pins, order material related to Alternative A.



B) If there are no marks of freewheeling on the shaft (no radial 360° scratches), just slight scratches are allowed – see picture below, continue with chapter 6, order material related to Alternative B, then continue with point “6. Reaming.

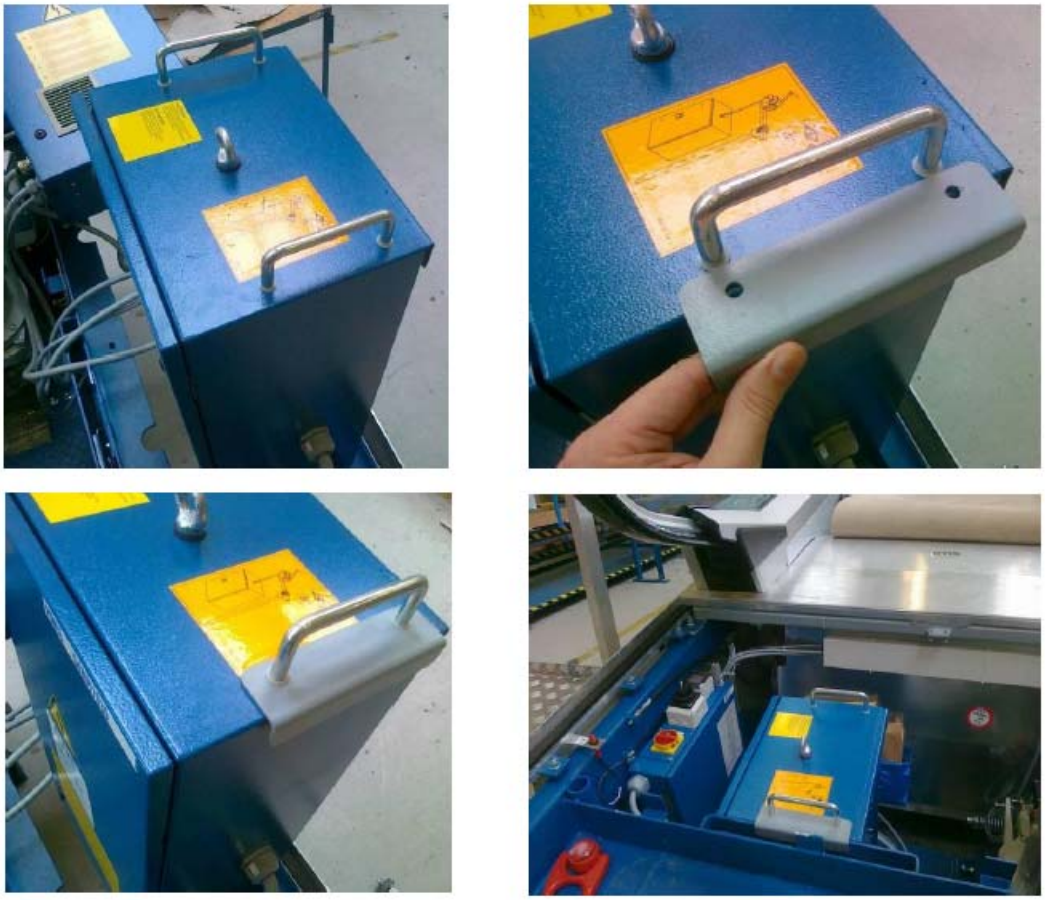
C) If freewheeling happened during operation and surfaces worn order new machine EC-W1 – see material order for related to alternative C, except following limitations - see chapter D.



D) In cases of these limitations, order material related to alternative D (gearbox EC-H3).

- Outdoor installation
- Step width 600 mm
- Step width 800 mm + VF drive

Installation of the controller holder NCE180CTR1 and turning it by 90º (degrees).



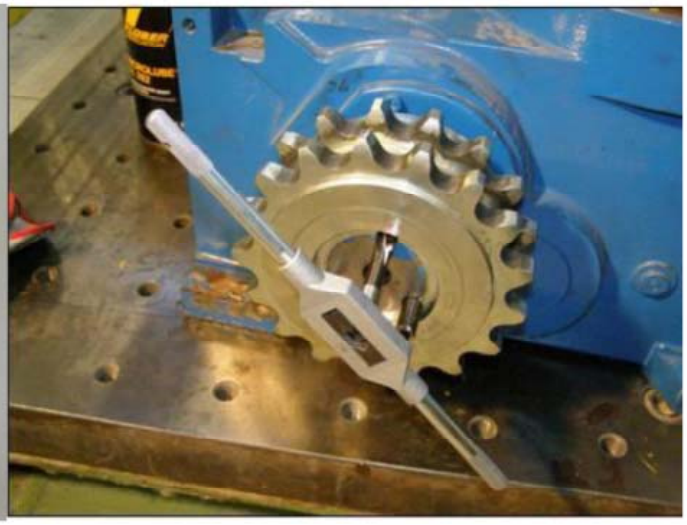
6. Reamng

6.1 Clear sprocket and shaft from dirt and put on the sprocket back to shaft by hand.

6.2 Tap in 1 C-pin or spiral pin (10÷15mm only) to fix the sprocket to the shaft.

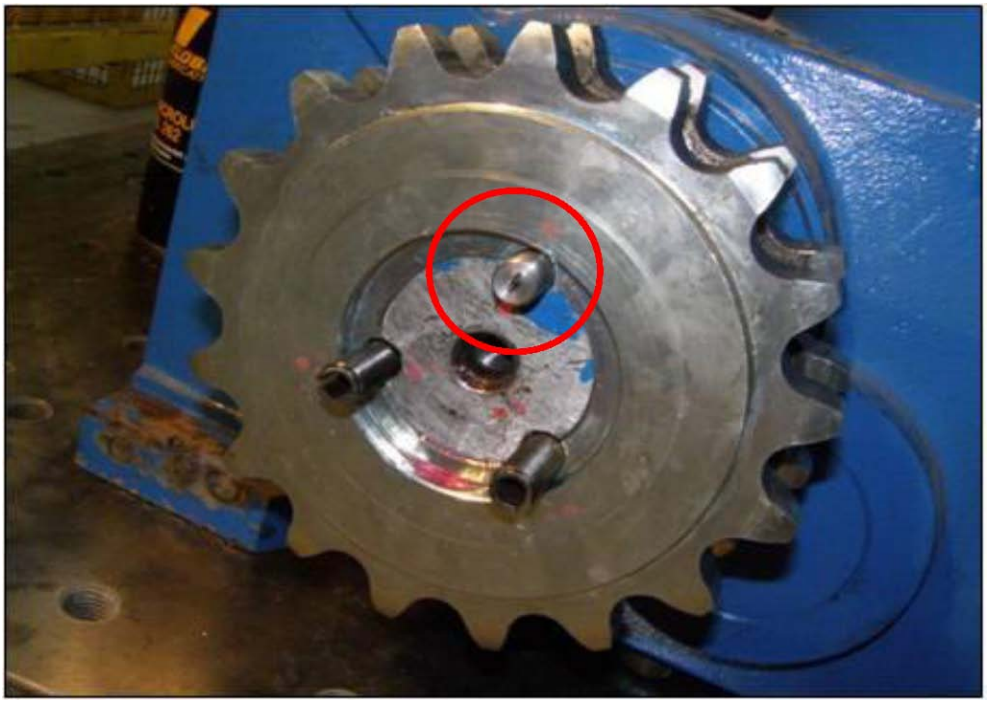
NOTE: The sprocket must not be loose on the shaft! If yes, use another C-pin or spiral pin and tap it in again just 10-15 mm.

6.3 Ream the first hole until a depth of >50 mm with the reamer and a tap wrench. Use cutting oil (e.g. ARECAL).Be careful when starting to ream to be aligned with the hole. This is not so easy. Only turn in clockwise direction, also when pulling the reamer out of the hole. NEVER turn in counter clockwise direction, the reamer will immediately become blunt.



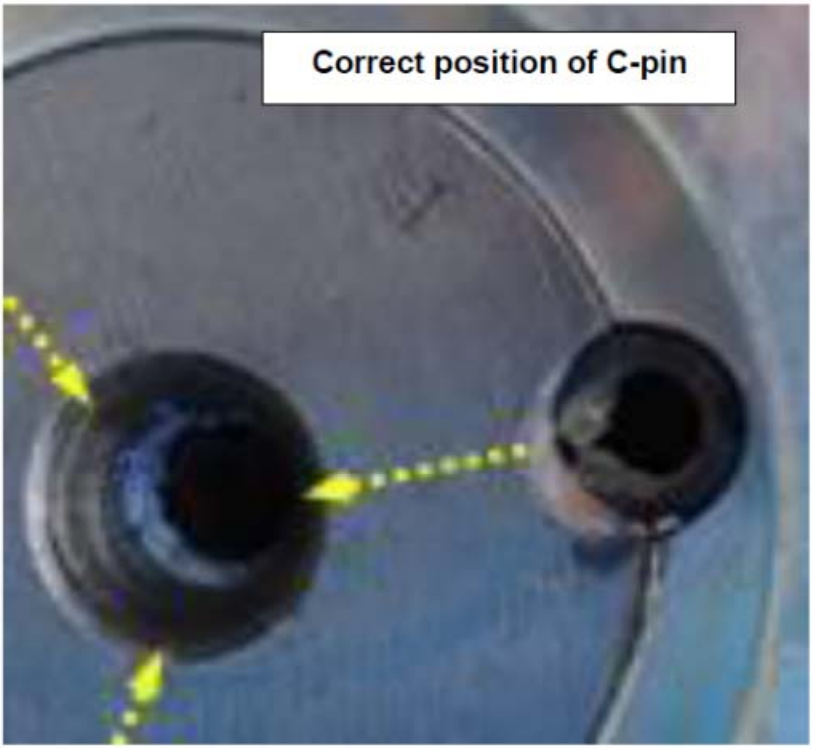
6.4 Remove chips from the hole with a brush not to block inserting of the pins.

6.5 Tap in first solid pin by hammer prudently for about 15÷20 mm.

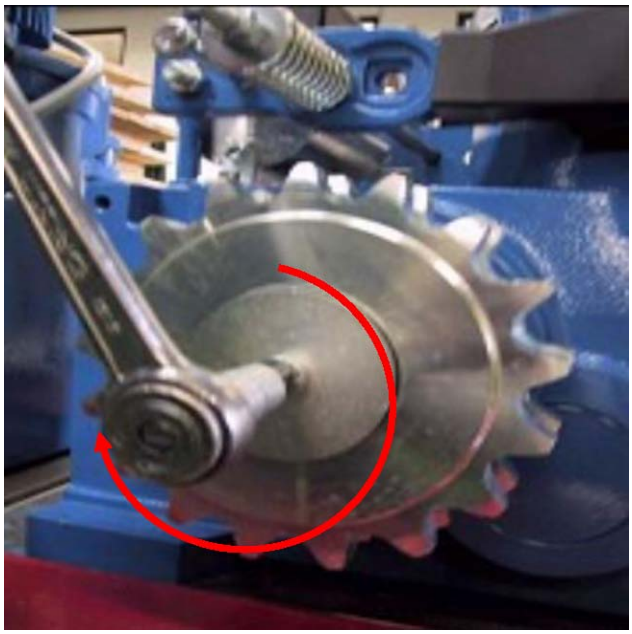


6.6 Repeat steps 5.3, 5.4 and 5.5. for second solid pin

6.7 Tap in both solid pins and as third the C-pin (NOT spiral pin) prudently with a hammer and a puncher and make sure that sprocket and shaft are even.



6.8 Reinstall the retaining plate centre cover.



IMPORTANT NOTE: Do not forget to glue in the central screw with Loctite 242 or 243!

7. Install the machine into the unit

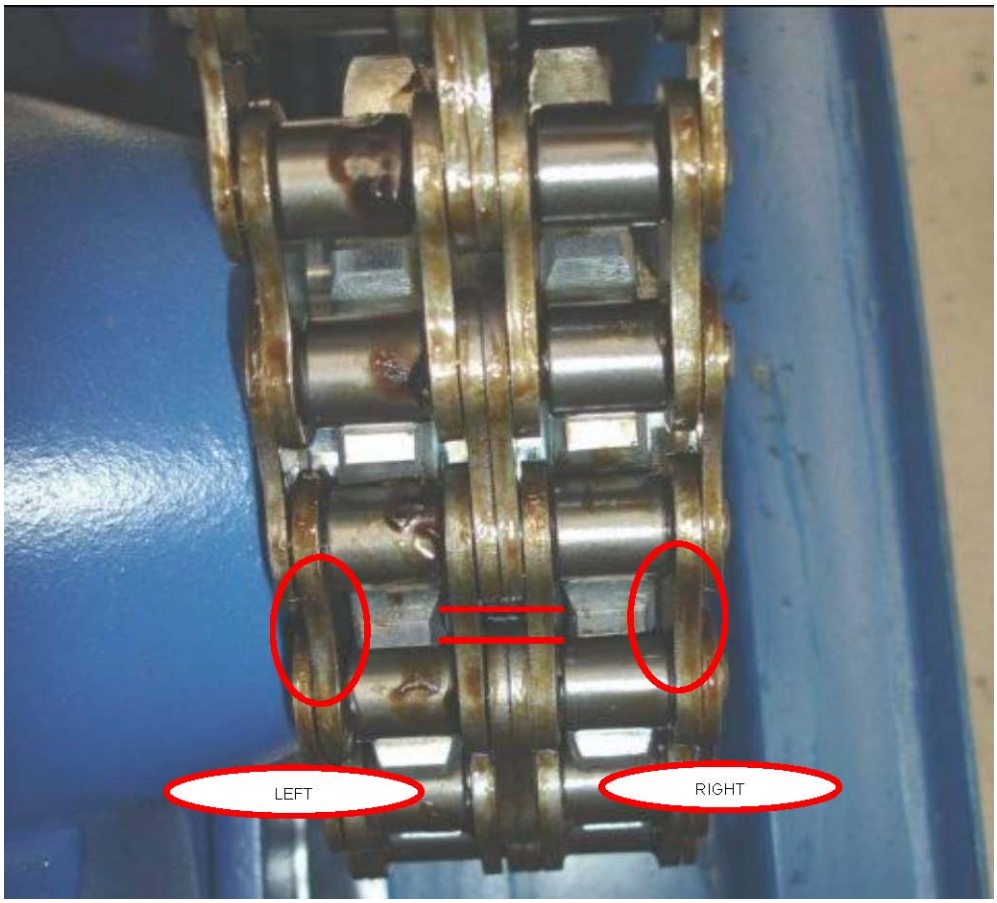
7.1 By means of a lifting device, the complete machine can be lower vertically back to machine room by assembly stand (GAA20401B773) with lifting device (GAA20401B774).

7.2 Connect the wiring of the motor.

7.3 Connect the main drive chain.

8. Alignment of machine and tension adjustment of main drive chain

To check the machine alignment, run the unit briefly at first, then lock out tag out and measure the gap between the step chain link and tooth of the sprocket on the **right** and **left** sides. Refer to illustration below.



If the gap between the step chain link and tooth of the sprocket on right and left side is NOT equal, then the machine must be aligned per described method in Section 10.1.3 of the field component manual described on the following page:

OTIS

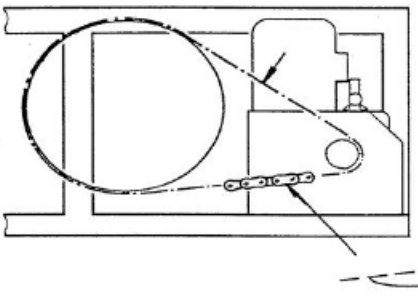
PRODUCT ADMINISTRATION

FIELD COMPONENT MANUAL

Section 10 - Adjustments
Escalator Otis 506 NCE
Mechanical adjustments

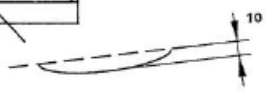
Part	:	4
No	:	G 9171 M01
Vintage	:	00 / 00
Page	:	4
Date	:	05.99

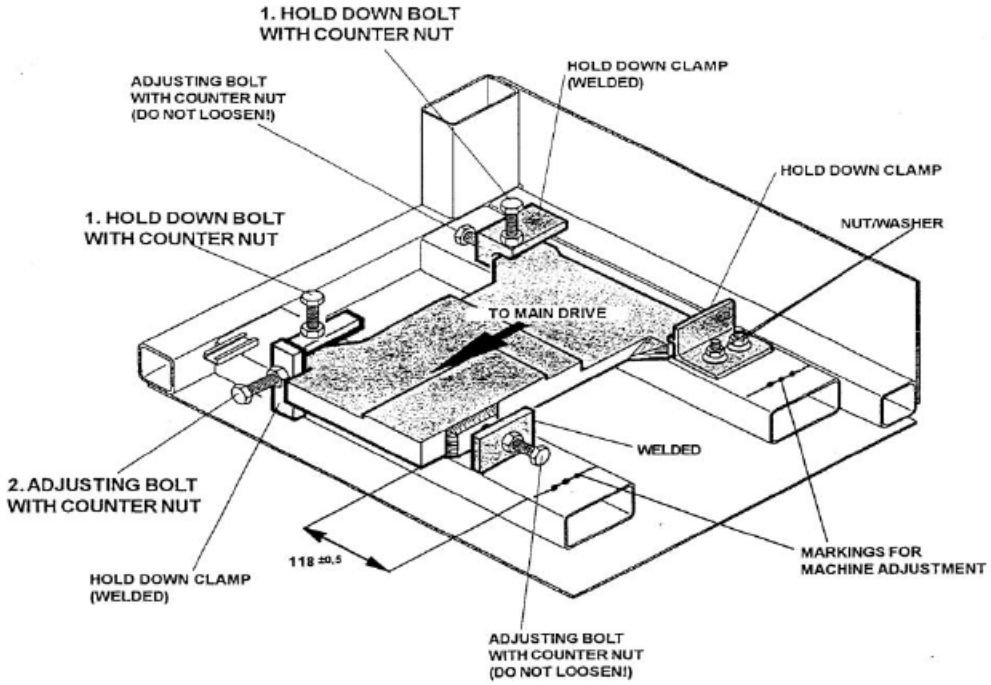
10.1.3 MAIN DRIVE CHAIN – TENSION ADJUSTMENT



THE MAIN DRIVE CHAIN WILL BE TENSIONED BY MOVING THE MACHINE. PLEASE FOLLOW THE GIVEN INSTRUCTION:

1. Loosen up lock nut and hold down bolt.
2. Loosen up lock nut on the adjusting bolt.
- Position the machine by turning the adjusting bolt. Secure position by fastening the hold down bolts and all lock nuts.





Final Work

8.1 Switch on main switch (remove lock).

8.2 Close landing.

8.3 Take off blocking landing.

8.4 Set escalator via keyswitch in operation.