EV4 Detailed Quick Start Guide

Knowing the elevator data following **6 steps** are required to place the elevator in service. If necessary, **EV4 User Manual (EV4UM)** can be used for further help.

Step 1: Check up before starting

- ✓ Check all wiring and prove whether the inverter is connected properly (**EV4UM**, *pages 12-16*)

- ✓ Set the correct language option using the parameter **A1-00**

- ✓ Swap to the **ADVANCE** parameter access level, set **A1-01=2**

- ✓ Check **OIL TEMPERATURE**; Go to **MONITOR menu** and read oil temperature from **U7-02**. It should match with the oil temperature in the tank (feel by hand). Otherwise check **EV4UM** *page 15* for correct wiring or *page 51* for trouble shooting.

- ✓ Setting should be done between **18°C** and **30°C** oil temperature. Do not increase oil temperature with unnecessary runs before the set up.

- ✓ Check if signaling is correct: Go to "Monitor menu" and observe **U1-10** parameter. **U1-10** shows **00001001** or **00000001** when nominal or leveling speed signals are given respectively (See **EV4UM**, *page 50*).

- ✓ If the Safe Disable function is not utilized for disabling the drive, the terminals HC, H1, H2 must be linked otherwise, the motor will not start.

Step 2: Input motor parameters; E1-xx and E2-xx

➡ to access Ex-xx parameters set A1-01=2

E1-01		E1-09			E2-01		E2-06	
E1-04		E1-10			E2-02		E2-07	
E1-05		E1-11			E2-03		E2-09	
E1-06		E1-12			E2-04		E2-11	
E1-07		E1-13			E2-05		E2-12	
E1-08								

➡ If Blain Hydraulics could not provide the specific motor parameters of yours, please perform auto tuning procedure as described in the **EV4 User Manual**, section 4.10, *page 25* or approximate setting of motor parameters can be done according to the description given at the end of this document.

➡ If Rotational Auto-tuning is done and tuning is ended with **End 1**, **End 2** or **End 3** warnings, ignore the warnings, the tuning is completed.

Step 3: Type in ELEVATOR & PUMP data:

- ✓ Set **A1-01** to **3** in order to access only necessary parameters.

- ✓ If the pump parameters (P1-11, P1-12, P1-13, P1-14 and P1-15) are not given in below table, these can be obtained using **Blain EV4 calculator** from http://www.blain.de/calculator .

P1-01		P1-05		P1-09		P1-14		P1-18	
P1-02		P1-06		P1-11		P1-15		P1-19	
P1-03		P1-07		P1-12		P1-16			
P1-04		P1-08		P1-13		P1-17			

- ✓ Pay attention that speed frequencies cannot be higher than the motor frequency.

- ✓ Lift speeds should have a descending order. That is, (P1-16>P1-17>P1-18>P1-19).

- ✓ When having a telescopic cylinder input the equivalent ram diameter in P1-04.

Step 4: **Set P4-01 to 1**: **In this step the inverter calculates reference speeds in Hz.**

➡️ If **oPE02** error appears and Red LED blinks → input parameters were set outside the possible setting range or temperature reading is false. Go back to STEP 3 and check P1-xx parameters and U7-02 (from the monitor menu) or check trouble shooting in EV4UM, page 52.

➡️ If **oPE12** error appears and Red LED blinks → input speed parameters (P1-xx) were not typed in correctly in a descending order (P1-16>P1-17>P1-18>P1-19) or temperature reading is false. Go back to STEP 3 and check P1-xx parameters and U7-02 (Monitor menu) or check trouble shooting in EV4UM, page 52.

Step 5: Prepare the elevator for a run

➡️ Make sure that cabin is empty and at the lowest floor level

5.1- Check the direction of motor rotation (parameter b1-14)

➡️ Give only leveling speed signal and observe the movement or hear the pump noise. If motor rotates in reverse direction, change the setting of **b1-*14*** (e.g. If b1-14 is 1 then set it to 0 or vice versa).

5.2- Send the elevator one floor up with nominal speed

➡️ If **SQEF** error happens after the run, this means that the elevator had no leveling speed. Increase the switch distance or reduce deceleration time (**C1-02**) parameter. Read **U7-07** parameter from "Monitor menu". **U7-07** shows the leveling time of the previous run. It should be about 1.5s. If it is much higher/ lower then increase/reduce **C1-02** parameter (not lower than 1.0s).

➡️ To cancel **SQEF** press "Reset" or to by-pass **SQEF** from happening see *page 31* of **EV4UM**.

5.3- Call the elevator to the lowest floor.

5.4- Set P4-01 to 2: In this step elevator asks for a teach run with empty car. The Red LED blinks. Run the elevator to the next floor with nominal speed (not with inspection speed).

(To cancel teach run procedure set **P4-01** to **0**)

5.5- Set P4-01 to 3: Saves settings.

Step 6: FINE TUNING (up direction) can be done by modifying the parameters shown below or EV4UM, *page 29*.

➡️ If the start is jerky (due to lower quality pump), parameters **P6-01** and **P6-02** can be modified (between 0.5 to 2.0s). Similarly **P3-07** can be modified to provide smoother start.

➡️ To provide good stopping accuracy at floor level, modify **C1-04** (increase it if elevator stays below the floor level or decrease it when overshoots).

➡️ If there is vibration in the car during leveling speed then increase leveling speed up to 0.10m/s. If continues connect a gas pulsation damper (Contact Blain Hydraulics) to the Z1 port of the EV4 valve.

➡️ When traveling with empty car " nEGrC " or **"NO LOAD"** alarms may blink on the display. These show that the car travels empty therefore load compensation has not been done. If you get these alarms **when the car is loaded** then the teaching should be done once more. Ignore these alarms if the car is empty.

DELAY DEENERGIZING MOTOR CONTACTORS ABOUT 1 SECOND AFTER THE CAR REACHES THE STOP SWITCH (i.e. After Forward Run-S1 signal is removed).

For further information refer to Fine Tuning guide.

Stop Dwell

f_{out}

P3-04

P3-07 * P6-06

P6-07

time

C1-04 C1-04

f_{out}

P3-01/ P3-02/P3-03 — Nominal/intermediate/Inspection speed

C2-02 C2-03

C1-01 C1-02

Start

Stop

Levelling speed

P3-04

C2-01 C2-04 C1-04

P3-07 Leakage

C1-03

For Nominal/Intermediate/Inspection

f_{out}

P3-07 + P6-01

P6-01

P3-07

C1-03 **P6-02** time

For Re-levelling travel

f_{out}

P3-07 * **P6-05** + P6-01

P6-01

P3-07 * **P6-05**

C1-03 **P6-03** time
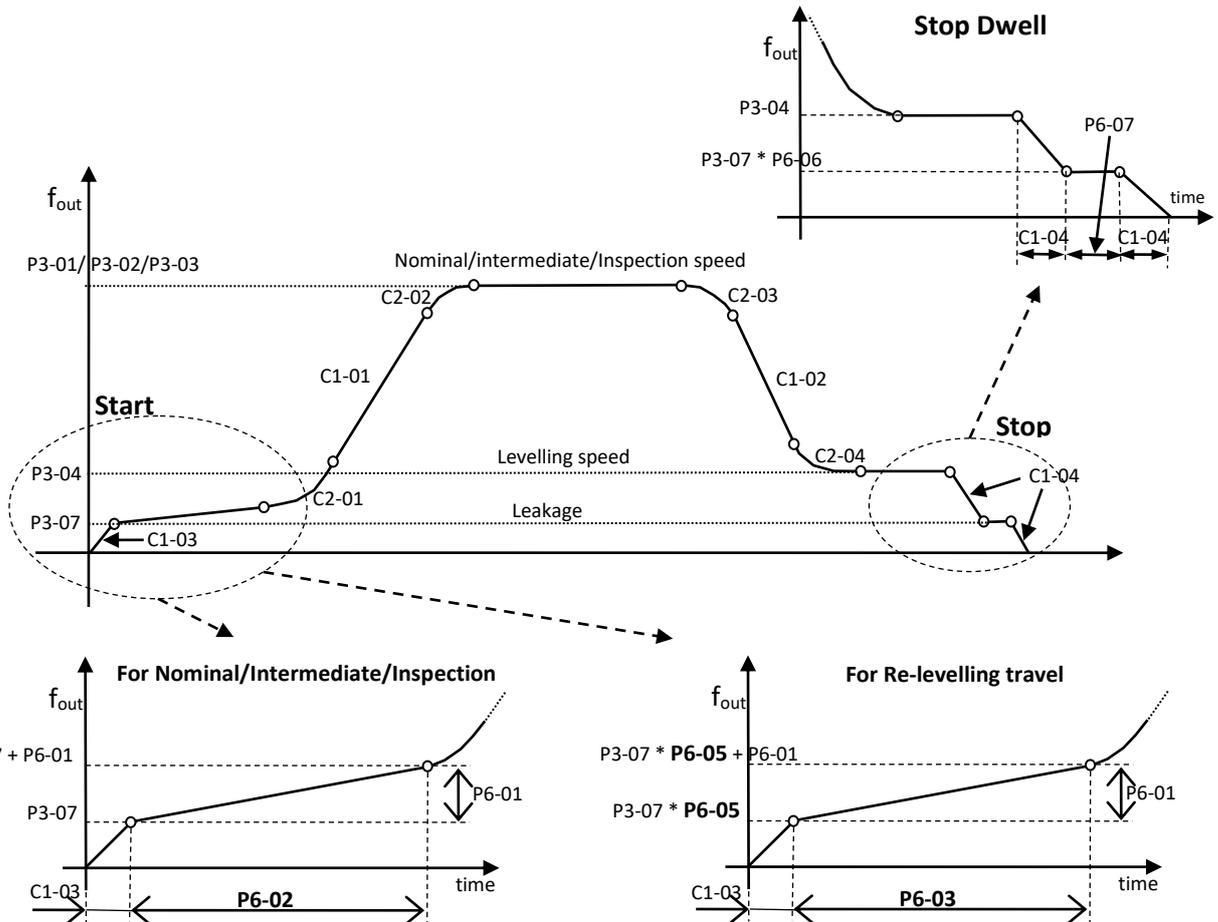
HOW TO SET UNKNOWN MOTOR PARAMETERS APPROXIMATELY

Suppose we have a motor plate data as 30kW, 400/690Vac, 50Hz, 3 Phase, Delta/Star I_n: 64A/35A, 2780rmp.

First carry out a stationary tuning. For that you <u>do not need</u> to take the by-pass piston out of the EV4 valve. This is because the tuning is done without rotating the motor.

How? Go to "Auto Tuning" menu, Select **T1-01=1** or **T1-01=2**, input also other T1-xx parameters according to the motor data plate, press RUN. This will calculate most of the motor parameters. However you may need to modify below parameters as suggested and replace them manually.

PS: To access Motor parameters Set **A1-01=2** (advance access level).

Power	30 kW 40 HP	50 Hz, 400V-Delta 3 Phase, 2780 rpm	
Type	--		
E1-01	400 VAC	E2-01	64 A
E1-04	50 Hz	E2-02	3.00 Hz
E1-05	400 VAC	E2-03	35.2 A
E1-06	50 Hz	E2-04	2
E1-07	3.0 Hz	E2-05	0.900 Ohm
E1-08	26.4 VAC	E2-06	17.0%
E1-09	0.5 Hz	E2-07	0.50
E1-10	4.8 VAC	E2-08	0.75
E1-11	0.0 Hz	E2-09	0.0%
E1-12	0.0Hz	E2-11	30 kW
E1-13	400 VAC	E2-12	1.30

E1-01, E1-05, E1-13= Motor supply voltage (400V)
E1-04, E1-06=Motor frequency (50Hz)
E1-07= 3.0Hz, E1-08=26.4Vac
E1-09= 0.5Hz, E1-10= 4.8Vac
E1-11, E1-12=0.0Hz
E2-01= Nominal current (64A)
E2-02= 2.00Hz
E2-03= 0.55 x E2-01 = 0.55 x 64A =35.2A
E2-04= Number of motor poles (2 for 2750rpm and 4 for 1450rpm)
E2-05= do not change it (it was measured during the stationary Auto tuning)
E2-06=17%, E2-07=0.50, E2-08=0.75, E2-09=0.0%
E2-11= Motor power (30kW)

Notes:

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