Delayed Motor Start with a Timer Relay

Date: 29.10.2026 · Rev. 1

Article address: https://drgmotor.com/en/blog/electric-motors/time-delay-relay-motor-start

Technical assumptions

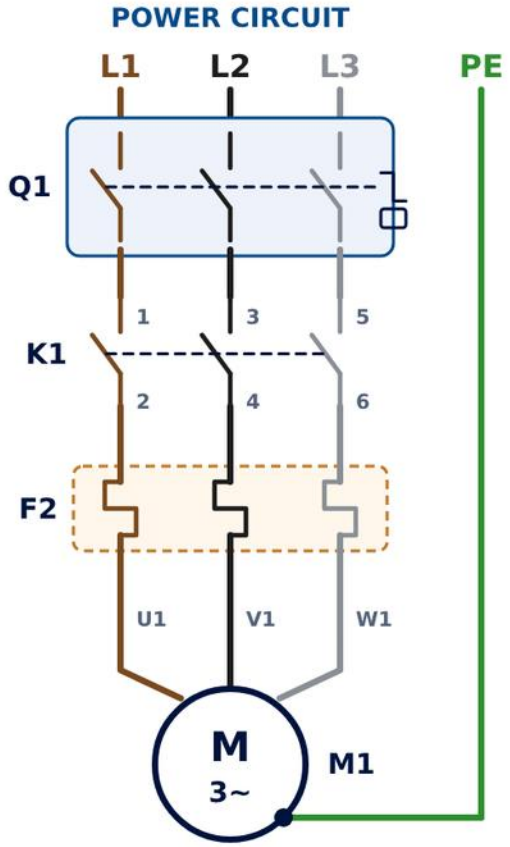
- 400 V 50 Hz three-phase supply, control circuit 230 V AC.
- KT: on-delay timer relay; the time setting follows the application and the device documentation.
- Terminal numbers are examples; the device's own wiring diagram prevails.
- Values are examples; Q1, F2, K1 and cable are selected from the motor nameplate.

Safety notice

- This content is for technical information only. Wiring, measurement and commissioning must be carried out by qualified electrical personnel, following lock-out and verification of de-energised state, and in line with the motor and device manufacturer's documentation.

Suitable DRG motors and store

- DRG-90L-4 (1,5 kW, 1500 rpm): https://drgmotor.com/en/buy-electric-motors-online/1-5-kw-1500-rpm-three-phase-motor-aluminium-drg-90l-4
- DRG-100L2-4 (3 kW, 1500 rpm): https://drgmotor.com/en/buy-electric-motors-online/3-kw-1500-rpm-three-phase-motor-aluminium-drg-100l2-4
- DRG-112M-4 (4 kW, 1500 rpm): https://drgmotor.com/en/buy-electric-motors-online/4-kw-1500-rpm-three-phase-motor-aluminium-drg-112m-4
- DRG-132S-4 (5,5 kW, 1500 rpm): https://drgmotor.com/en/buy-electric-motors-online/5-5-kw-1500-rpm-three-phase-motor-aluminium-drg-132s-4
- https://drgmotor.com/en/buy-electric-motors-online



Components
Q1 motor protection breaker (short circuit + overload)
K1 contactor main contacts 1-2 / 3-4 / 5-6
F2 overload relay; contact 95-96 in control circuit
M1 three-phase induction motor, frame bonded to PE

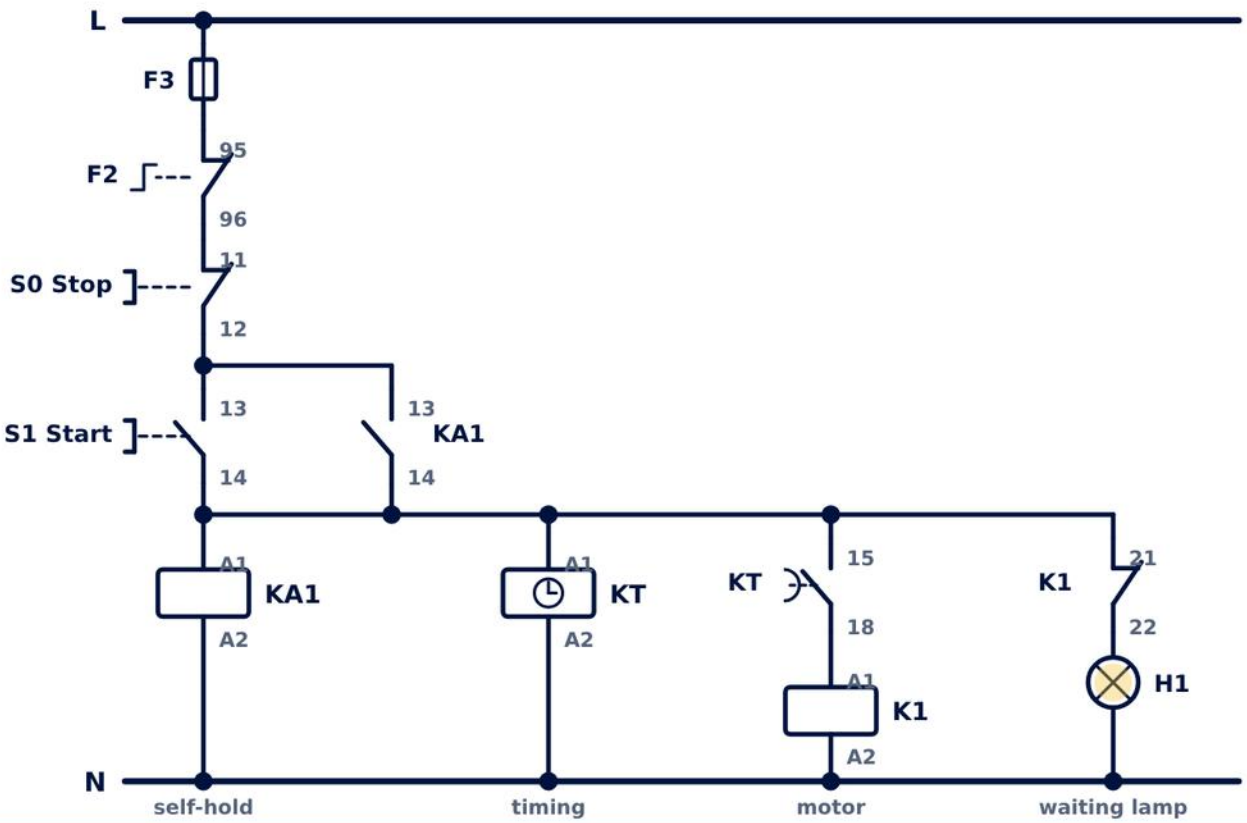
The KT timer is not part of the power circuit.
It only decides WHEN the K1 coil is energised;
motor current flows through the K1 main contacts.

Q1, F2 and cable are chosen from the nameplate current.
Example diagram: 400 V 50 Hz three-phase supply.

Delayed start — power circuit

Q1 motor protection breaker · K1 contactor · F2 overload relay · M1 motor

Figure 1

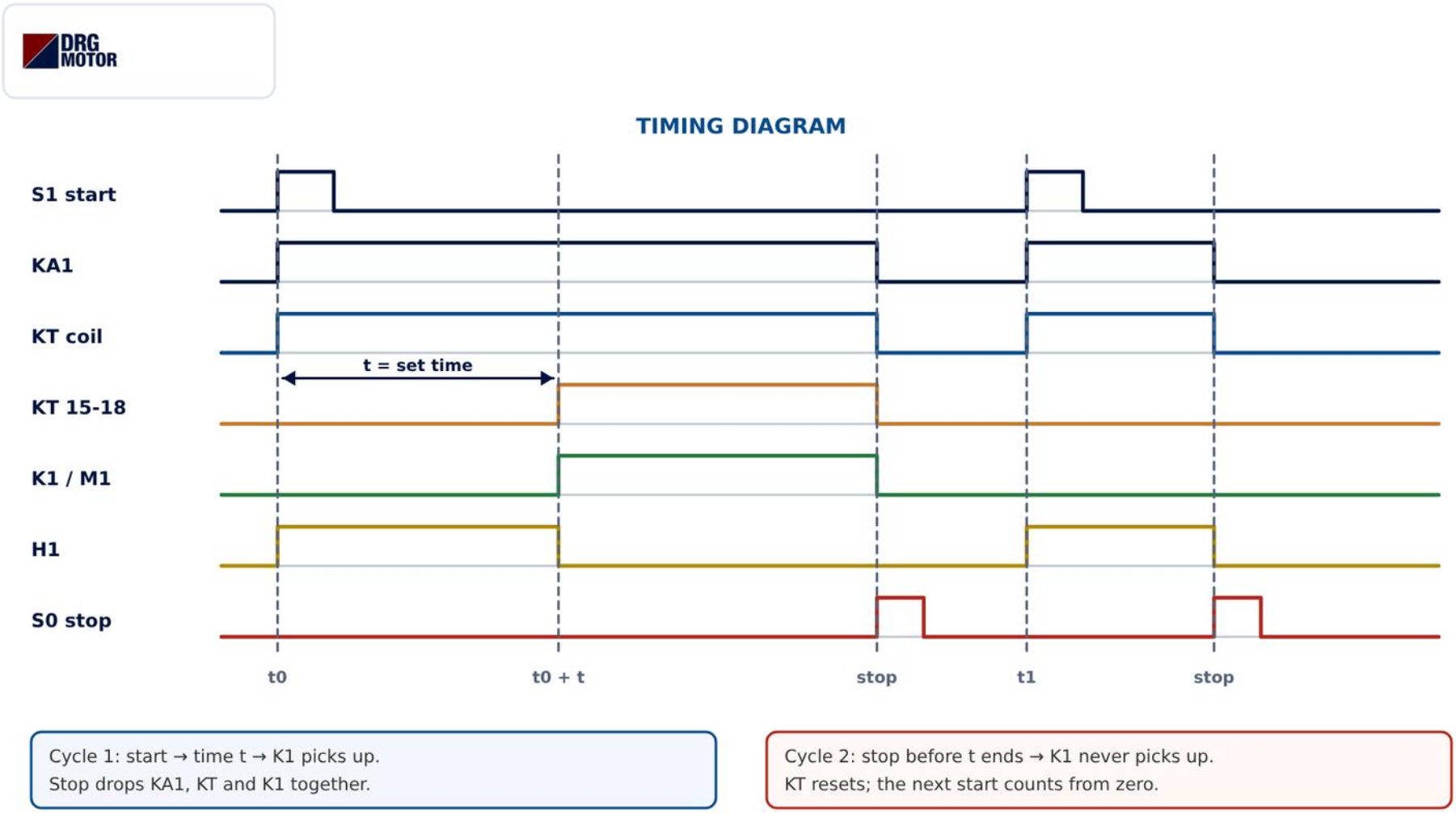


KT 15-18: on-delay NO contact — closes when the set time has elapsed after the KT coil is energised; opens at once when the coil is de-energised.
Terminal numbers vary by device; the device's own wiring diagram prevails.

On-delay motor start — control circuit

F3 control fuse · S0 stop · S1 start · KA1 holding relay · KT timer · K1 contactor · H1 lamp

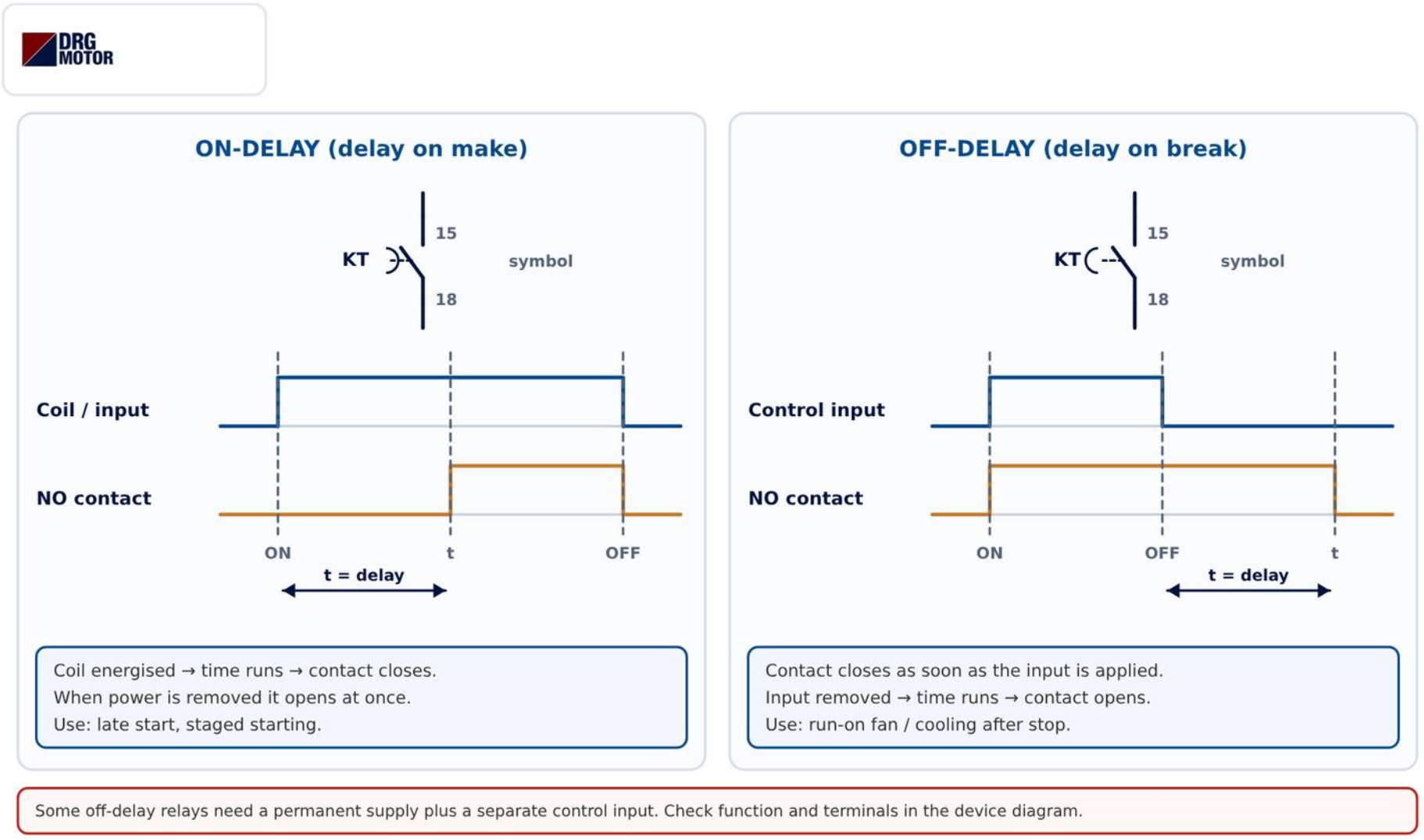
Figure 2



On-delay start — timing diagram

High level: button pressed / coil energised / contact closed

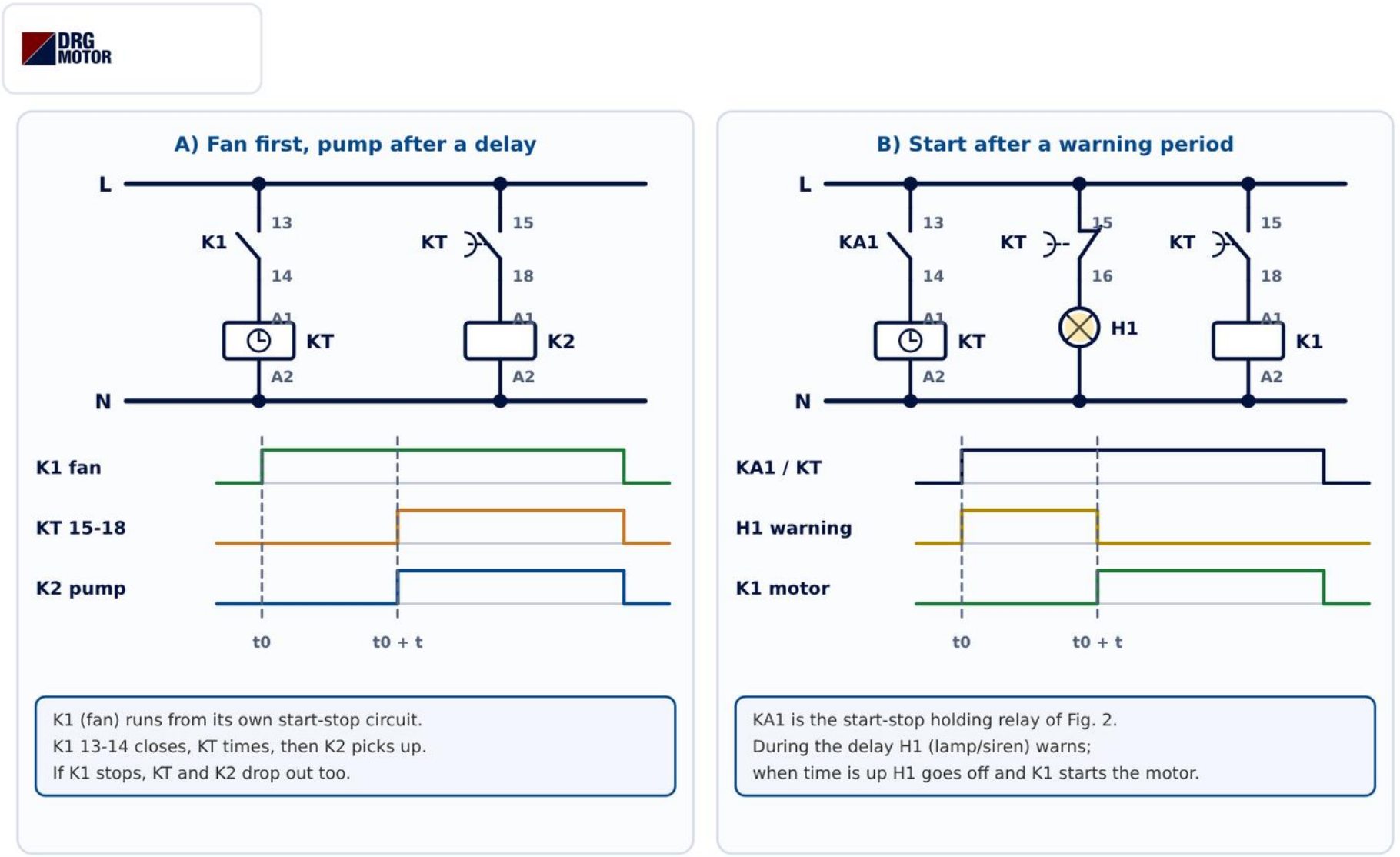
Figure 3



On-delay vs off-delay timer relay

Same NO contact, two different time behaviours · t = set time

Figure 4



Delayed start application examples

KT 15-16 / 15-18 are the changeover contact of the same timer · terminals vary by device

Figure 5