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## Supplement to operation manuals 300766038 and 300890265

### Supplement 300961830\_002\_C1

**Products:           VARODRY VD 160 and VARODRY VD 200**  
**111160Vxx – 111200Vxx**

### **VARODRY Soft Starter usage**

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For the following versions of VARODRY the use of a soft starter is mandatory:

111160V10	VARODRY VD 160, 200/400V 50Hz
111160V11	VARODRY VD 160, 230/460V 60Hz
111160V12	VARODRY VD 160 OEM, 50Hz, 200/400V
111160V13	VARODRY VD 160 OEM, 60Hz, 230/460V
111160V15	VARODRY VD 160, 400V 50Hz, Purge
111160V16	VARODRY VD 160, 230/460V 60Hz, Purge
111160V21	VARODRY VD 160, 200/380V 60Hz
111160V22	VARODRY VD 160 OEM, 60Hz, 200/380V
111160V26	VARODRY VD 160, 200/380V 60Hz, Purge
111160V35	VARODRY VD 160 HD/O2 50Hz 200/400V Purge
111160V36	VARODRY VD 160 HD/O2 60Hz 230/460V Purge
111160V37	VARODRY VD 160 HD/O2 60Hz 200/380V Purge
111200V10	VARODRY VD 200, 200/400V 50Hz
111200V11	VARODRY VD 200, 230/460V 60Hz
111200V12	VARODRY VD 200 OEM, 50Hz, 200/400V
111200V13	VARODRY VD 200 OEM, 60Hz, 230/460V
111200V15	VARODRY VD 200, 400V 50Hz, Purge
111200V16	VARODRY VD 200, 230/460V 60Hz, Purge
111200V21	VARODRY VD 200, 200/380V 60Hz
111200V22	VARODRY VD 200 OEM, 60Hz, 200/380V

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111200V26	VARODRY VD 200, 200/380V 60Hz, Purge
111200V35	VARODRY VD 200 HD/O2 50Hz 200/400V Purge
111200V36	VARODRY VD 200 HD/O2 60Hz 230/460V Purge
111200V37	VARODRY VD 200 HD/O2 60Hz 200/380V Purge

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## Introduction

A motor soft starter is a device used with AC electrical motors to temporarily reduce the load and torque in the powertrain and electric current surge of the motor during start-up. This reduces the mechanical stress on the motor and shaft, as well as the electrodynamic stresses on the attached power cables and electrical distribution network, extending the lifespan of the system.

*Figure 1: Exemplary image of a soft starter module*



## Specification

For the related pump variants, the use of a **dual phase soft starter** is required. The type selection mainly depends on the maximum current, which is linked to the mains voltage at production site and the applicable control voltage.

Table 1: General soft starter specification

Specification Soft Starter*	Suited for Pump Type	Suited for Mains Voltage at Production Site**	Suitable Leybold Accessory
≥ 11A; 200-480V 50/60Hz Control voltage 110-230V AC	VD 160, VD 200	400V/50Hz, 460V/60Hz, 380V/60Hz	111005A65
≥ 11A; 200-480V 50/60Hz Control voltage 24V DC	VD 160, VD 200	400V/50Hz, 460V/60Hz 380V/60Hz	111005A66
≥ 19A; 200-480V 50/60Hz Control voltage 110-230V AC	VD 160, VD 200	200V/50Hz, 230V/60Hz 200V/60Hz	111005A67
≥ 19A; 200-480V 50/60Hz Control voltage 24V DC	VD 160, VD 200	200V/50Hz, 230V/60Hz 200V/60Hz	111005A68

\*The related current is based on the assumption of 60°C ambient temperature.

\*\*Covers ± 10% deviation of supply voltage

## Installation



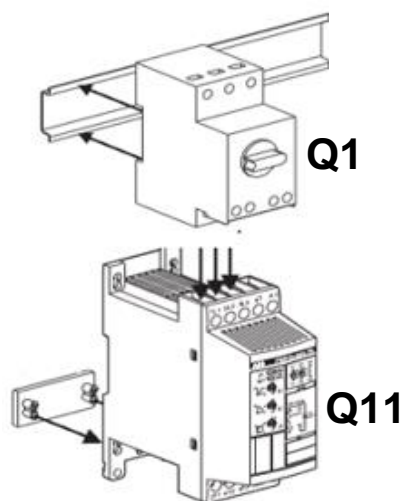
### NOTICE:

**A preconnected motor circuit breaker is required**



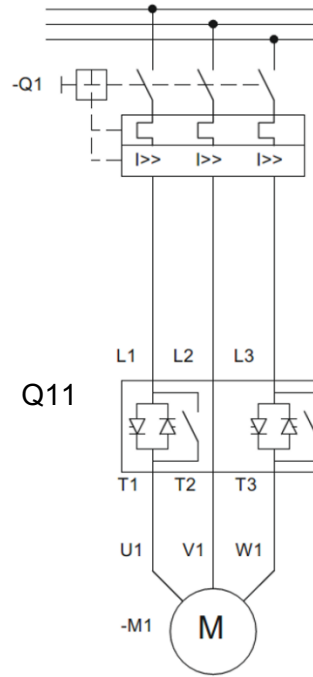
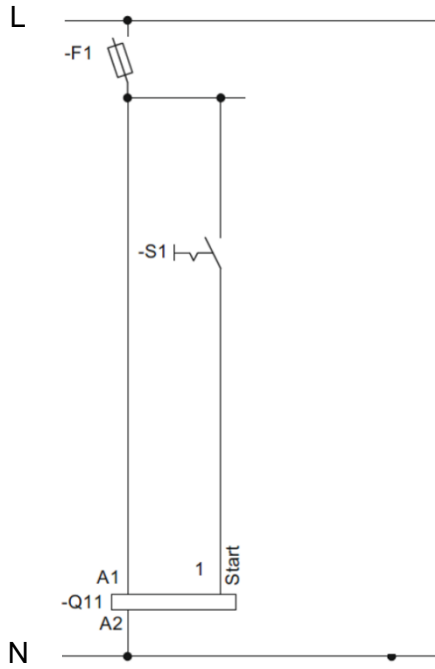
### NOTICE:

**Safety instructions and information on installation in the soft starter instruction manual must be strictly observed**



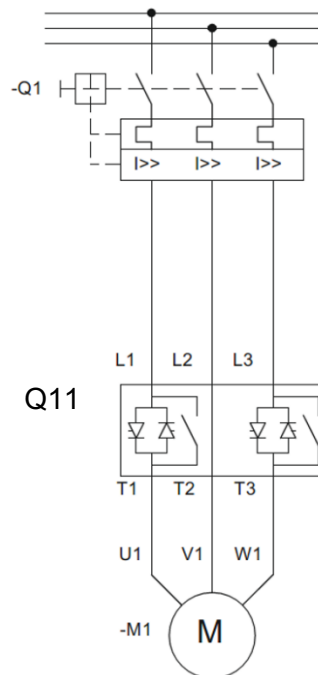
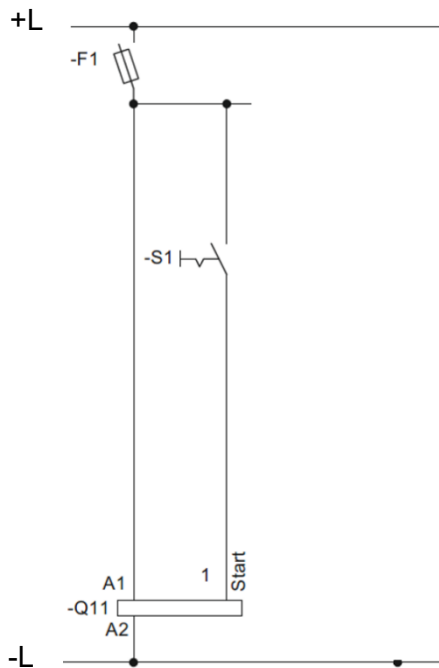
## Connection

### Schematic diagram with single phase (110-230V AC) control supply



Q1

### Schematic diagram with 24V DC control supply



Q1



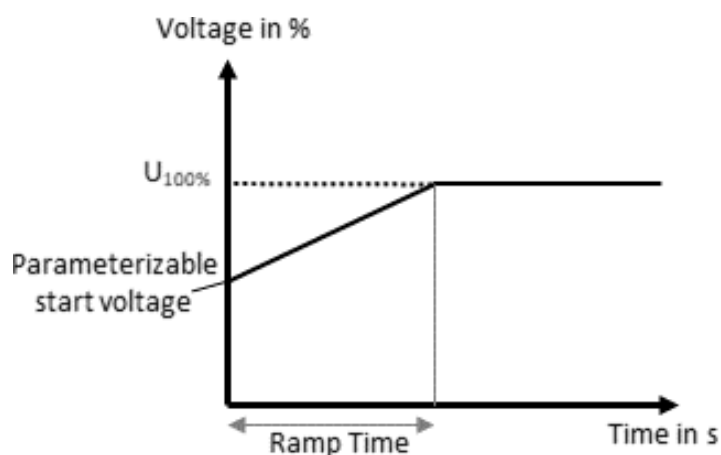
## Settings

Before using the soft starter connected to the related VARODRY pumps, the start voltage as well as the ramp-up time (see Figure 2) must be set according to Table 2.

Table 2: Soft starter settings for VARODRY

<b>Start Voltage [%]</b>	<b>60</b>
<b>Ramp Time [s]</b>	<b>10</b>

Figure 2: Schematic diagram of soft starter parameters



## General information



### NOTICE:

Failure to comply with the settings may result in damage to the pump



### NOTICE:

The maximum number of starts within one hour is limited to 10 for all related VARODRY pumps