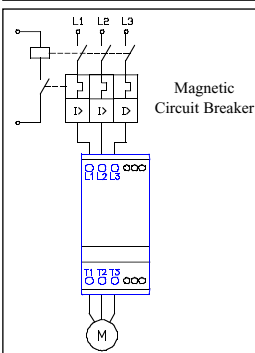


Application hints Starting Torque Limiter type STL 3 XXXX

Line Controlled Soft-Start

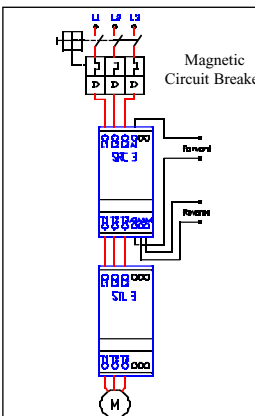


When the contactor C1 is switched to the On-state, the motor controller will soft start the motor according to the settings of the Ramp-Up time and initial torque adjustments.
When the contactor C1 is switched to the OFF-state, the motor will be switched Off instantaneously.

Selection of Thermal Magnetic Circuit Breaker

Motor full load current in A	MCB Danfoss CTI 25	MCB ABB MS 325	MCB Telemecanique GV
0.10 - 0.16 A	047B3020	MS 325 - 0.16	GV 2-M 01
0.16 - 0.25 A	047B3021	MS 325 - 0.25	GV 2-M 02
0.25 - 0.40 A	047B3022	MS 325 - 0.40	GV 2-M 03
0.40 - 0.63 A	047B3023	MS 325 - 0.63	GV 2-M 04
0.63 - 1.00 A	047B3024	MS 325 - 1.00	GV 2-M 05
1.00 - 1.63 A	047B3025	MS 325 - 1.60	GV 2-M 06
1.60 - 2.50 A	047B3026	MS 325 - 2.50	GV 2-M 07
2.50 - 4.00 A	047B3027	MS 325 - 4.00	GV 2-M 08
4.00 - 6.00 A	047B3028	MS 325 - 6.30	GV 2-M 10
6.00 - 10.0 A	047B3029	MS 325 - 10.0	GV 2-M 14
10.0 - 16.0 A	047B3030	MS 325 - 16.0	GV 2-M 20
16.0 - 20.0 A	047B3031	MS 325 - 23.0	GV 2-M 21
20.0 - 25.0 A	047B3032	MS 325 - 25.0	GV 2-M 22

Combining Reversing Electronic Contactor & Soft Starter



Soft-Reversing of motors up to 4 kW

A soft-reversing of a motor can easily be achieved by connecting a reversing relay to the Starting Torque Limiter. The reversing relay type SRC 3 DX will determine the direction of rotation forward or reverse and the Starting Torque Limiter type STL 3 -XXX wil perform soft-starting of the motor.

Short-circuit Protection

Two types of short-circuit protection can be used:

- Short-circuit protection by circuit breaker.
 - Short-circuit protection by fuses.
- Short-circuit protection is divided into 2 levels Type 1 / Type 2
Type 1: Short-circuit protects the installation
Type 2: Short-circuit protects the installation and the semiconductors inside the motor controller

a) Short-circuit protection by circuit breaker

A 3-Phase motor with correctly installed and adjusted overload relay wil not short circuit totally to earth or between the 3 phases. Part of the winding will normally limit the short circuit current to a value that will cause instantaneous magnetic tripping of the circuit breaker without damage to the STL. The magnetic trip response current is approx. 11 times the max. adjustable current. A short-circuit coordination test has been made with the Danfoss CTI 25.

Motor full load current in A	Short-circuit protection (Line voltage 380 - 415)		
	MCB Danfoss CTI 25	Max. prospective short-circuit current	
		Type 1 (15/25A)	Type 2 (15/25A)
0.10 - 0.16 A	047B3020	50 kA (15 A type)	50 kA (15 A type)
0.16 - 0.25 A	047B3021	50 kA (15 A type)	50 kA (15 A type)
0.25 - 0.40 A	047B3022	50 kA (15 A type)	50 kA (15 A type)
0.40 - 0.63 A	047B3023	50 kA (15 A type)	50 kA (15 A type)
0.63 - 1.00 A	047B3024	50 kA (15 A type)	50 kA (15 A type)
1.00 - 1.63 A	047B3025	50 kA (15 A type)	50 kA (15 A type)
1.60 - 2.50 A	047B3026	50 kA (15 A type)	10 kA (15 A type)
2.50 - 4.00 A	047B3027	50 kA (15 A type)	6 kA (15 A type)
4.00 - 6.00 A	047B3028	50 kA (15 A type)	3 kA (15 A type)
6.00 - 10.0 A	047B3029	20 kA (15 A type)	1 kA (15 A type)
10.0 - 16.0 A	047B3030	10 kA (25 A type)	5 kA (25 A type)
16.0 - 20.0 A	047B3031	8 kA (25 A type)	3 kA (25 A type)
20.0 - 25.0 A	047B3032	8 kA (25 A type)	3 kA (25 A type)

b) Short-circuit protection by fuses

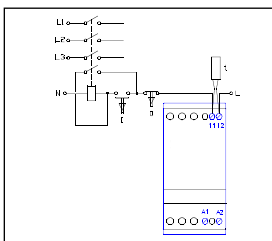
Type 1: STL 3 - XX 15 protection max 50 A. gL/gL/gG.
: STL 3 - XX 25 protection max 80 A. gL/gL/gG. 63A T

Type 2: STL 3 - XX 15 protection max I_{2t} of the fuse 1800 A²S
: STL 3 - XX 25 protection max I_{2t} of the fuse 6300 A²S

Recommended fuse :

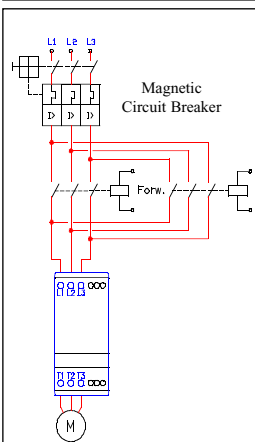
	Ferraz	Siemens
STL 3 - XX15	6,600 CP URGB 14.51/50	Sillized 5SD4 80 A
STL 3 - XX25	6,600 CP URG 22x58/80	Sillized 5SD5 100A

Thermal Overload Protection



The thermostat is connected in series with the control circuit of the main contactor. When the temperature of the heatsink exceeds 100°C the main contactor will switch Off. A manual reset is necessary to restart this circuit.

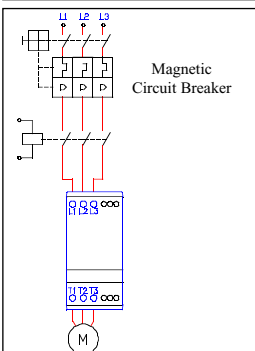
Combining Reversing Mechanical Contactor & Soft Starter



Soft-Reversing of motors up to 11 kW

A soft-reversing of a motor can easily be achieved when the motor load exceeds 4kW, by connecting a mechanical reversing contactor to the Soft Starter. The reversing contactor will determine the direction of rotation Forward or Reverse and the Starting Torque Limiter type STL 3-XXXX will perform soft-starting of the motor.

Overload Protection with Thermal Magnetic Circuit Breaker

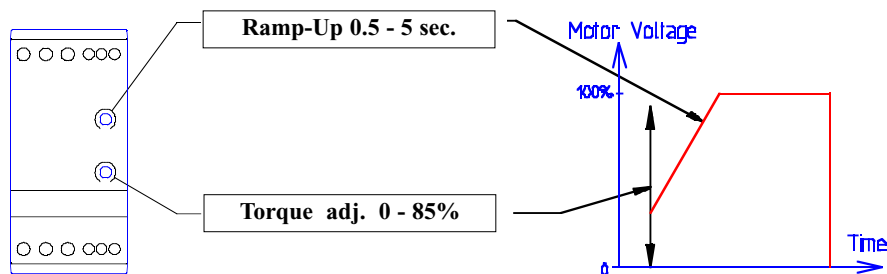


Overload protection of the motor is easily achieved by installing a manual thermal magnetic circuit breaker on the supply side of the motor.
The circuit breaker provides means for padlocking and the necessary clearance for use as a circuit isolator according to EN 60204-1. Select the manual circuit breaker from the selection table or equivalent according to the rated current of the motor. Adjust the current limit on the MCB according to the rated nominal current of the motor

Application hints Starting Torque Limiter type STL 3 XXXX

Utilisation Categories (IEC 947-4-2)	Rating Index	
AC - 52a Control of slipping motor stators	STL 3 - XX15	STL 3 - XX25
AC - 53a Control of squirrel cage motor	15A: AC-52a: 4-13 : 100 - 3000	25A: AC-52a: 4-13 : 100 - 3000
AC - 58a Control of hermetic refrigerant compressors with automatic resetting of overload releases	15A: AC-53a: 8-3 : 100 - 3000	25A: AC-53a: 8-3 : 100 - 3000
	15A: AC-58a: 6-6 : 100 - 3000	25A: AC-58a: 6-6 : 100 - 3000

How to adjust time and torque



Control of the motor torque is achieved by acting on the motor voltage. The motor speed depends on the load on the motor shaft. A motor with little or no load will reach full speed before the voltage has reached its maximum value.

Please note:

The Starting Torque Limiter will read time and torque settings in the off state. Repeated starts may trip the motor protection relay.

Use screwdriver 2mm x 0.5 mm

A. Ramp-Up time adjustment (Standard Load)		B. Initial Torque adjustment (Standard Load)	
	A1) Set the <i>Ramp-Up</i> potentiometer to maximum		B2) Set the <i>Initial Torque</i> switch to minimum
	A4) Decrease the <i>Ramp-Up</i> time until the desired start is achieved		B3) Switch the contactor ON for a short time. If the load does not rotate immediately increment the <i>Initial Torque</i> and try again. Repeat until the load starts to rotate immediately on Start-Up