

All about Motors

Notes on engineering

Important data and features of three-phase automatic starters

1) Type of starter	Stator resistance starter (for squirrel-cage motors)			Rotor starter (for slipring rotors)
2) Part no. of starter	Star-delta switches	With starting resistors	With start-up transformers	Rotor resistance starter
3) Number of starting stages	1 only	Normally 1	Normally 1	Selectable (no longer selectable when current or torque have been determined)
4) Voltage reduction at the motor	0.58 x rated operational voltage	Selectable: a x rated operational voltage (a < 1) e.g. 0.58 as with $\Upsilon\Delta$ -switch	Selectable: 0.6/0.7/0.75 x U _a (transformer tapplings)	None
5) Inrush current taken from mains	0.33 x inrush current at rated operational voltage	a x inrush current at rated operational voltage	Selectable (see 4) 0.36/0.49/0.56 x inrush current at rated operational voltage	Selectable: from 0.5 to about 2.5 x rated operational current
5a) Inrush current at the motor			Selectable (see 4) 0.6/0.7/0.75 x I _e	
6) Starting torque	0.33 x tightening torque at rated operational voltage	a ² x tightening torque at rated operational voltage	Selectable (see 4) 0.36/0.49/0.56 x tightening torque at rated operational voltage	Selectable (see 5) from 0.5 to pull-out torque
7) Current and torque reduction	Proportional	Current reduction less than torque reduction	Proportional	Current reduction much greater than torque reduction. From pull-out torque to rated speed almost proportional
8) Approximate price (for similar data) DOL starting = 100 (with overload relay, enclosed)	150 – 300	350 – 500	500 – 1500	500 – 1500