
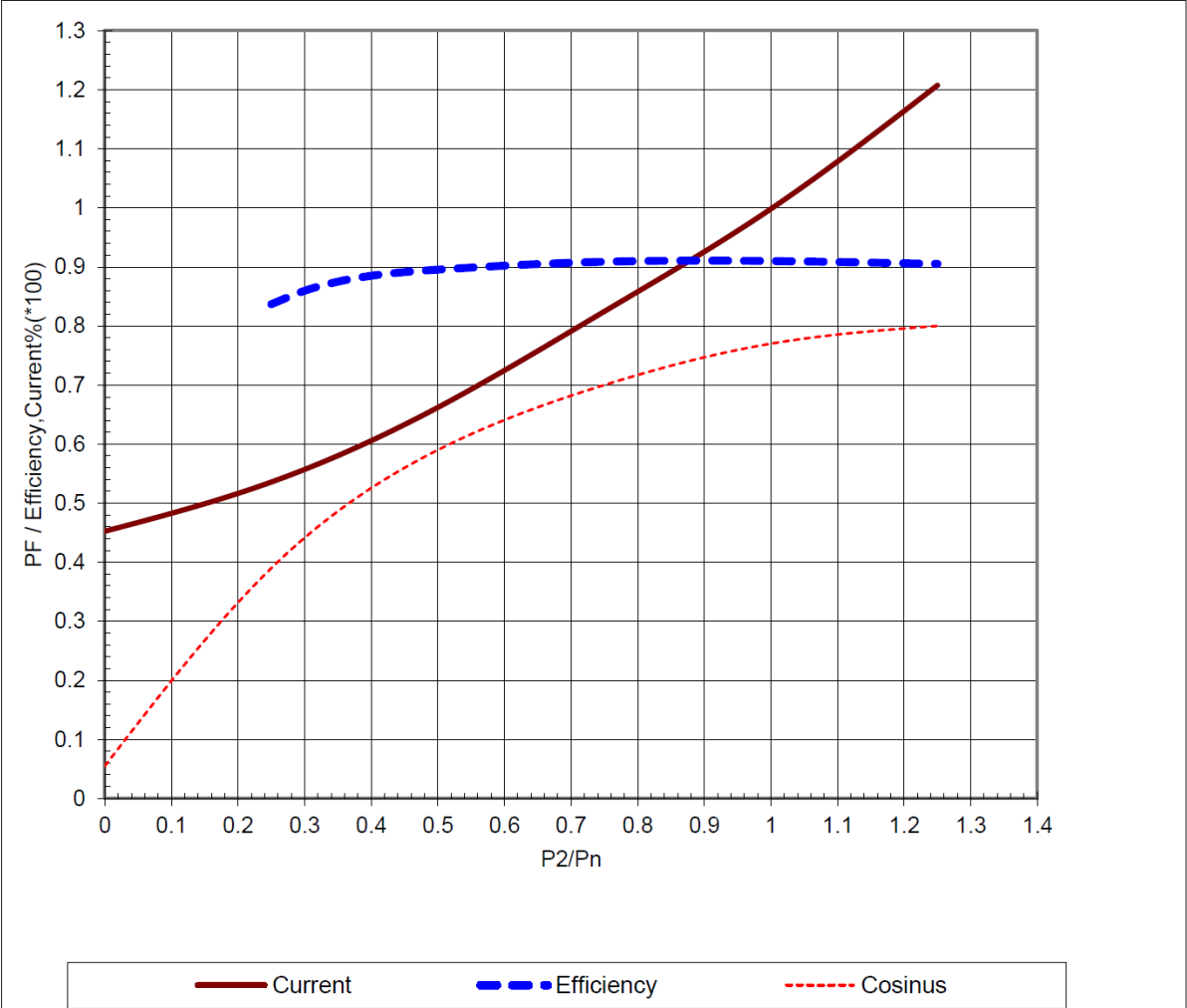


9.0	Condenser Tube Ball Recirculating Pump Motor		T91
9.1	Make		ABB
9.2	Type		Squirrel cage induction, TEFC
9.3	Applicable Standard		IEC
9.4	Quantity for 2 Units	Nos.	4
9.5	Duty		S1, Continuous
9.6	Design Ambient Temperature	° C	50
9.7	Degree of Protection		IP 55
9.8	Rated Power	kW	9.3
9.9	Nominal Current	Amps	20.2
9.10	Synchronous Speed	RPM	1470
9.11	Frame Size		160ML
9.12	Rated Voltage / frequency		380V AC, 50Hz, 3 Ph
9.13	Voltage variation		± 10%
9.14	Frequency variation		± 5%
9.15	Combined Voltage / Frequency variation		10% absolute
9.16	Class of insulation		F (Temperature rise limited to class B)
9.17	Type of Starting		Direct - on - line (DOL)
9.18	Drive Transmission		Flexible Coupling
9.19	Efficiency	%	91 (IE2)
9.20	Power Factor	%	0.77
9.21	KKS No.		50PAH11AP010-M01, 50PAH12AP010-M01

NOTE : KKS No. Shall be changed from "50" to "60" for UNIT 6 .

ABB Motors and Generators	Load Curves		
	Project	Location	
Department/Author	Customer name	Customer ref.	Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 02-07-2018	Saving ident untitled.xls Pages 2(3)
Product	TEFC, 3-phase, squirrel cage induction motor		
Type/Frame	M2BAX 160MLJ 4	Calc. ref.	3GZH021016-36
Product code	3GBA 162 490-ADDIN		
Rated output P _N	9.3	kW	
Type of duty	S1 100%		
Voltage (V)	380	Current I _N (A)	20.2
Frequency (Hz)	50	Speed (r/min)	1470
		Power factor at P _N	0.77
		Efficiency (%) at P _N	91



P2/P _n	Current (%)	Efficiency (%)	Cosinus (%)
0.0	0.45	-	0.05
0.1	0.50	-	0.20
0.2	0.55	-	0.35
0.3	0.60	0.85	0.45
0.4	0.65	0.88	0.55
0.5	0.70	0.90	0.62
0.6	0.75	0.90	0.68
0.7	0.80	0.90	0.72
0.8	0.85	0.90	0.75
0.9	0.90	0.90	0.77
1.0	0.95	0.90	0.78
1.1	1.00	0.90	0.79
1.2	1.05	0.90	0.80
1.3	1.10	0.90	0.80
1.4	1.15	0.90	0.80

Data based on situation 6/26/2015

All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004


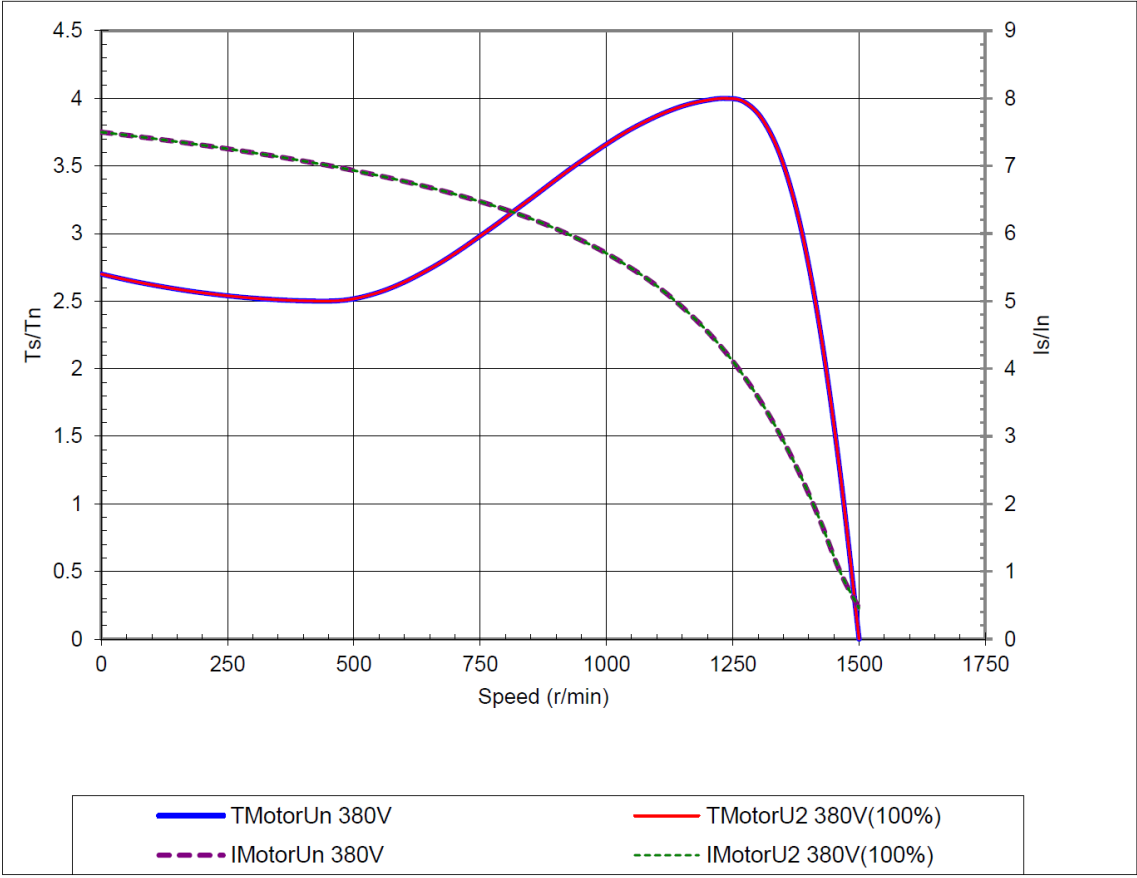

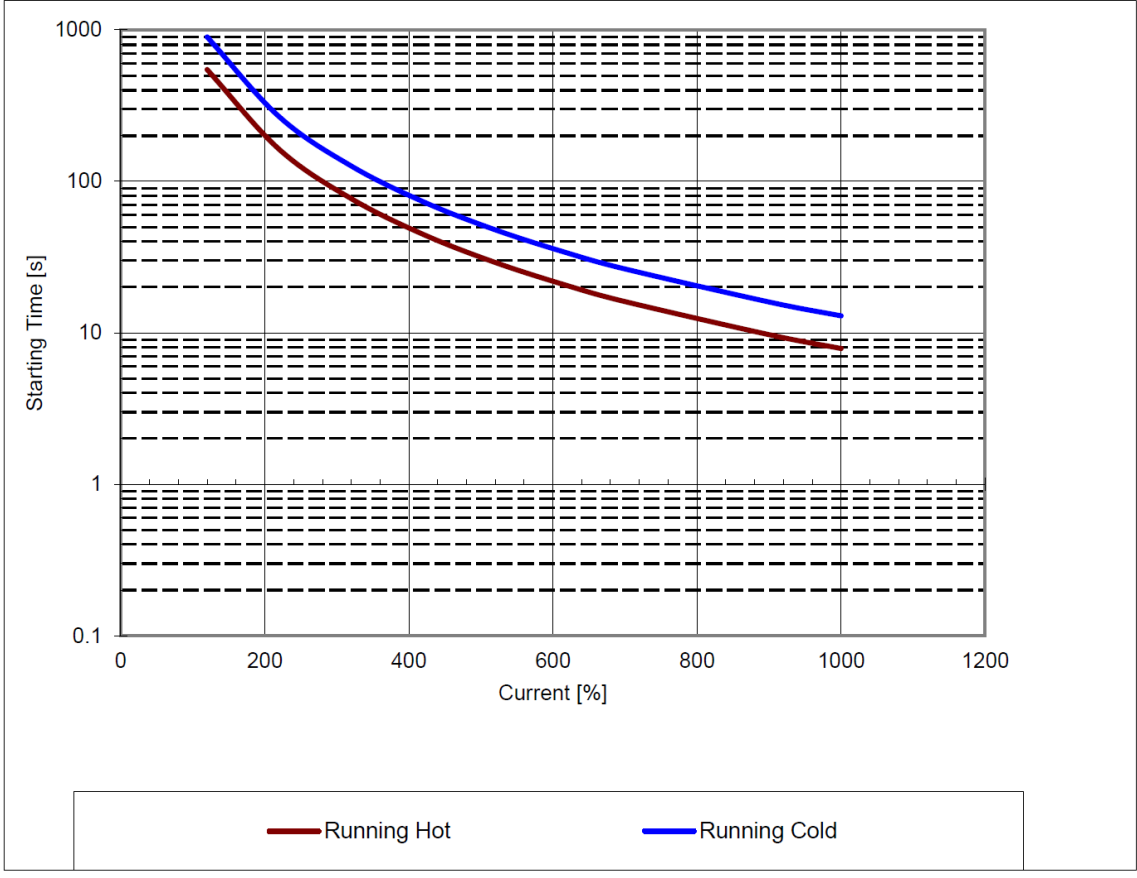
ABB Motors and Generators		Starting Curves			
		Project	Location		
Department/Author	Customer name	Customer ref.	Item name 1.00001		
Our ref.	Rev/Changed b Date of issue A 02-07-2018	Saving ident untitled.xls	Pages 3(3)		
Type of product	TEFC, 3-phase, squirrel cage induction motor				
Type/Frame	M2BAX 160MLJ 4	Calc. ref.	3GZH021016-36		
Product code	3GBA 162 490-ADDIN	Frequency (Hz)	50		
Rated output P _N	9.3 kW	Rated current I _N	20.2	A	
Type of duty	S1 100%				
J _{motor} (kgm ²)	0.1	Voltage (V) 100%	380	Voltage (V)	380V(100%)
J _{load} (kgm ²)		T _{start} /T _N	2.7	T _{start} /T _N	2.7
Speed (r/min)	1470	Starting time (s)		Starting time (s)	
T _N (Nm)	60	Speed (r/min)		Speed (r/min)	
T _{load} (Nm)		I _s /I _n	7.5	I _s /I _n	7.5
		T _{max} /T _n	4	T _{max} /T _n	4
					
<p>Data based on situation 6/26/2015</p> <p>All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004</p>					

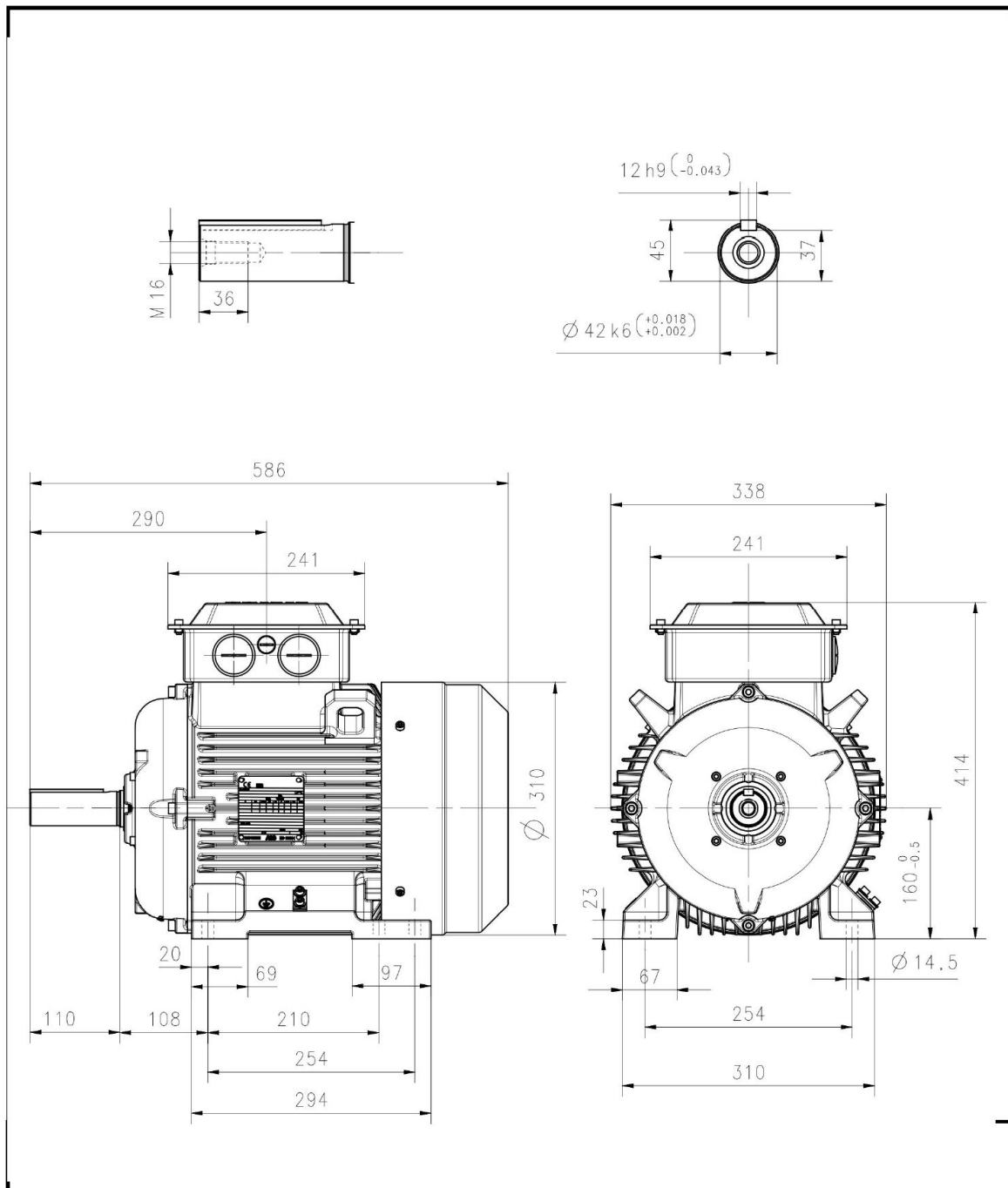
ABB Motors and Generators	Thermal Withstand Curve			
	Project	Location		
Department/Author	Customer name	Customer ref.		Item name 1.00001
Our ref.	Rev/Changed b Date of issue A 02-07-2018	Saving ident untitled.xls		Pages 5(3)
Type of product	TEFC, 3-phase, squirrel cage induction motor			
Type/Frame	M2BAX 160MLJ 4	Calc. ref.	3GZH021016-36	
Product code	3GBA 162 490-ADDIN	Frequency (Hz)	50	
Rated output P _N	9.3 kW	Rated current I _N	20.2	A
Type of duty	S1 100%			
J _{motor} (kgm ²)	0.1	Voltage (V) 100%	380	Voltage (V) 380V(100%)
J _{load} (kgm ²)		T _{start} /T _N	2.7	T _{start} /T _N 2.7
Speed (r/min)	1470	Starting time (s)		Starting time (s)
T _N (Nm)	60	Speed (r/min)		Speed (r/min)
T _{load} (Nm)		I _s /I _n	7.5	I _s /I _n 7.5
		T _{max} /T _n	4	T _{max} /T _n 4




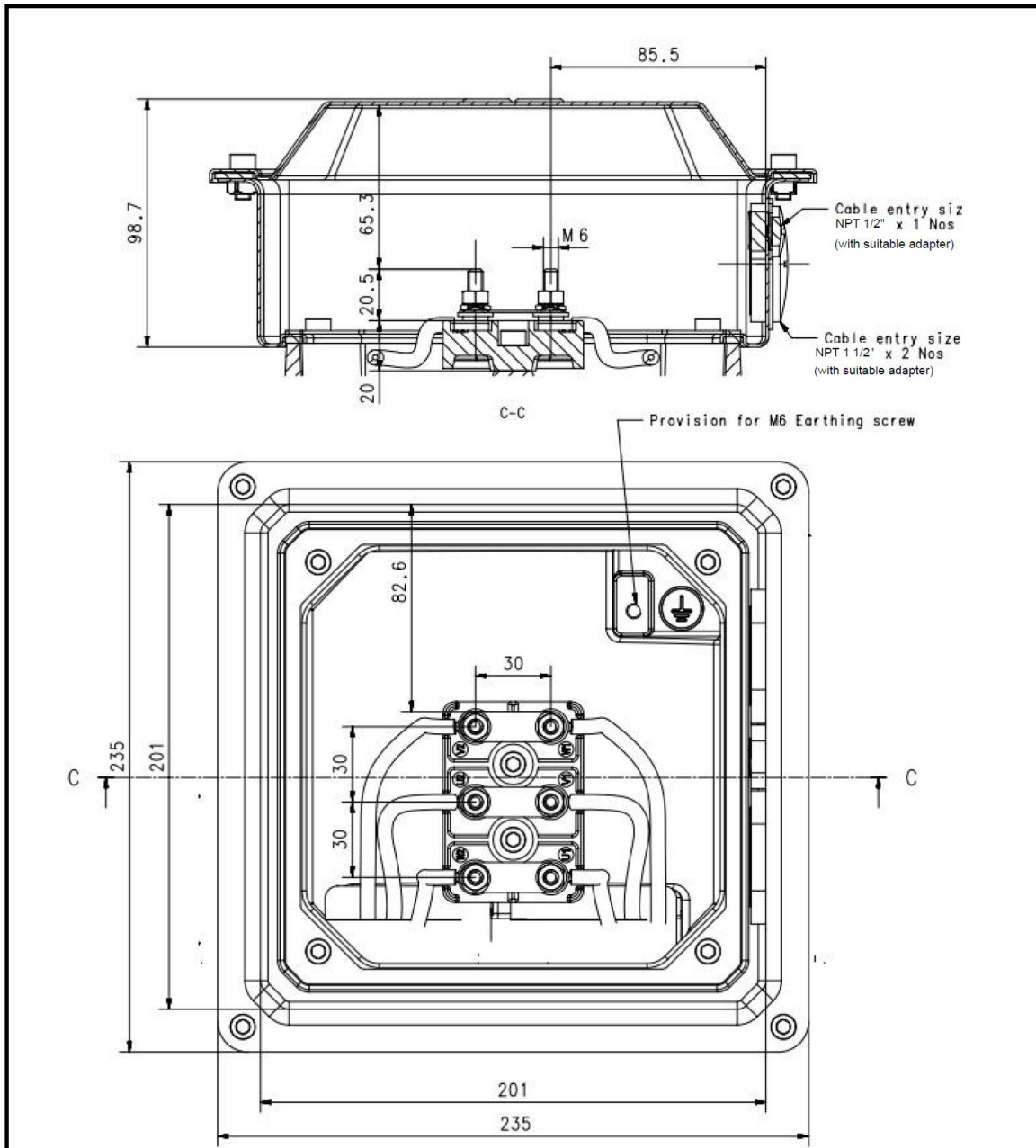
The graph plots Starting Time [s] on a logarithmic y-axis (0.1 to 1000) against Current [%] on a linear x-axis (0 to 1200). Two curves are shown: a red line for 'Running Hot' and a blue line for 'Running Cold'. Both curves show that starting time decreases as current increases. The 'Running Cold' curve is consistently higher than the 'Running Hot' curve.

Current [%]	Starting Time [s] (Running Hot)	Starting Time [s] (Running Cold)
100	~100	~200
200	~30	~60
400	~10	~20
600	~5	~12
800	~3	~8
1000	~2	~6


Data based on situation 6/26/2015
 All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004



Dimension Print	Motor Type:	M2BAX 160 Short B3, V5, V6	Document No:	3GZH500016-1 A
	Description:	STANDARD IE1, IE2 SQUIRREL CAGE MOTOR		
Unit:	ABB LV Motors, India.	Issued by:	MB	Replaces:
Date:	2014-03-10	Approved by:	SA	Replaced by:
Customer Reference:				ABB



Additional Information:

Dimension Print	Motor Type:	Document No:
	M2BAX 160-200 IE1, IE2; M2BAX 160-180 IE3	3GZH101716-15 A
Description: TERMINAL BOX		
Unit: ABB LV Motors, India.	Issued by: MB	Replaces:
Date: 2014-03-10	Approved by: SA	Replaced by:
Customer Reference:		ABB