ABB Motors and Generators	Technical Data Sheet - DOL			
	Project		Location	
Department/Author	Customer name		Customer ref.	Item name **1.00001**
Our ref.	Rev/Changed by **A**	Date of issue **2/1/2016**	Saving ident **untitled.xls**	Pages **1(3)**

No.	Definition	Data	Unit	Remarks	
1	Product	***TEFC, 3-phase, squirrel cage induction motor***			
2	Product code	**MM16182-PPN (3GBP161430-A**		Calc. ref.	3GZF021016-257
3	Type/Frame	***M3BP 160MLC 2***			
4	Mounting	***IM1001, B3(foot)***			
5	Rated output P_N	***18.5***	kW		
6	Service factor	***1***			
7	Type of duty	***S1(IEC) 100%***			
8	Rated voltage U_N	***400***	VD	± 5 % (IEC 60034-1)	
9	Rated frequency f_N	***50***	Hz	± 2 % (IEC 60034-1)	
10	Rated speed n_N	***2932***	r/min		
11	Rated current I_N	***31.5***	A		
12	No-load current	***7***	A		
13	Starting current I_s/I_N	***7.5***		Fullfilled IEC 60034-12 design N,H	
14	Nominal torque T_N	***60***	Nm		
15	Locked rotor torque T_S/T_N	***2.9***			
16	Maximum torque T_{max}/T_N	***3.4***			
17	Minimum torque T_{min}/T_N	***2.5***			
18	Speed at minimum torque	***660***	r/min		
	Load characteristics (IEC 60034-2-1:2007)	Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	*100*	**31.5**	**92.0 / IE2**	**0.92**
20		*75*	**23.9**	**93.1**	**0.9**
21		*50*	**16.7**	**93.1**	**0.86**
22		*Start*	**237**		**0.45**
23	Maximum starting time from hot	***15***	s		
24	Maximum starting time from cold	***27***	s		
25	Insulation class / Temperature class	***F / B***			
26	Ambient temperature	***40***	°C		
27	Altitude	***1000***	m.a.s.l.		
28	Enclosure	***IP55***			
29	Cooling system	***IC411 self ventilated***			
30	Bearing DE/NDE	***6309/C3 - 6209/C3***			
31	Type of Grease				
32	Sound pressure level (LP dB(A) 1m)	***69***	dB(A)	at load	
33	Moment of inertia J = ¼ GD2	***0.063***	kg-m2		
34	Balancing				
35	Vibration class				
36	Position of terminal box	***Top***			
37	Terminal box entries; no, dimens.				
38	Number of power terminals				
39	Direction of rotation	***CW or CCW***			
40	Total weight of motor	***170***	kg		
41	Dimension drawing no.				
42					
43					
44					
45					
Ex-motors					
46					
47					
48					
Option	Variant Codes / Definition				
49					
50					
51					
52					

Remarks:

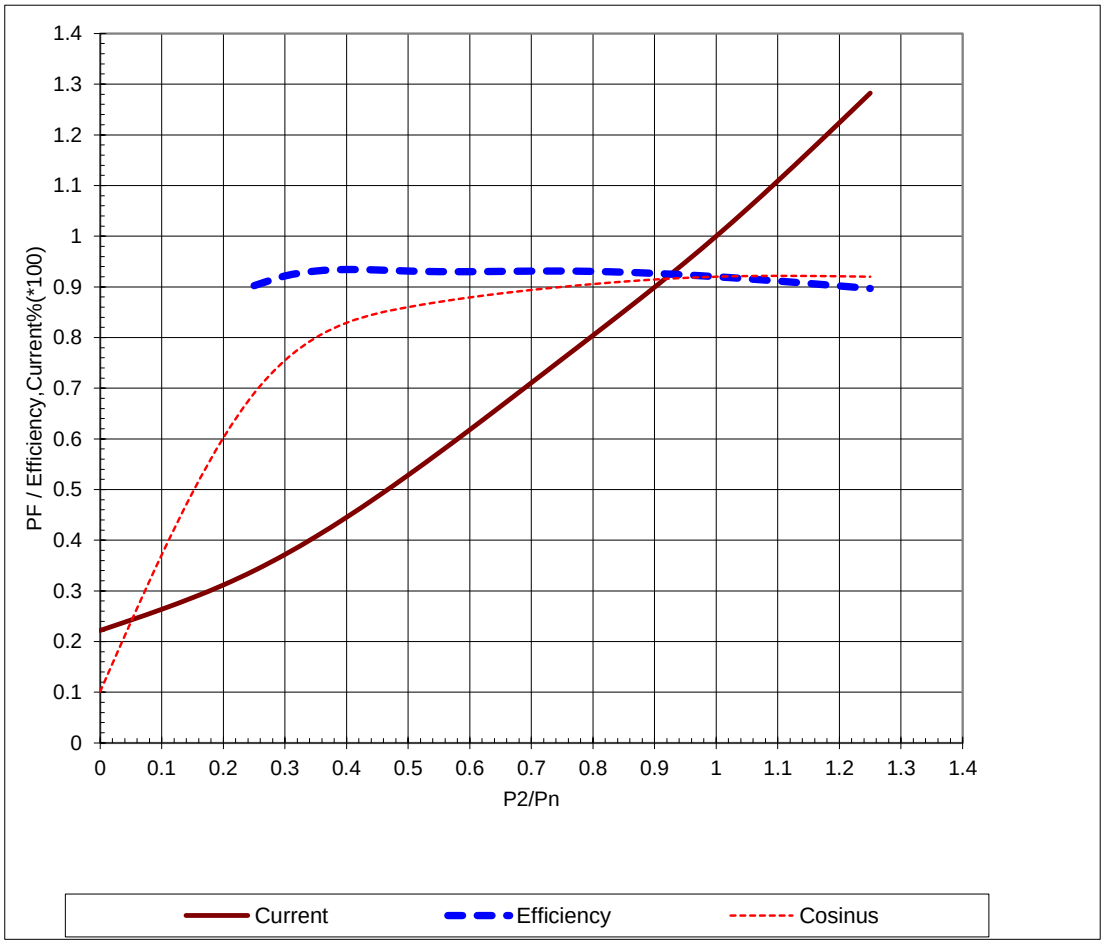
Data based on situation 12/14/2015
All data subject to tolerances in accordance with IEC
Guaranteed values on request

ABB Motors and Generators Load Curves

	Project	Location	
Department/Author	Customer name	Customer ref.	Item name **1.00001**
Our ref.	Rev/Changed by Date of issue **A** **2/1/2016**	Saving ident **untitled.xls**	Pages **2(3)**

Product	**TEFC, 3-phase, squirrel cage induction motor**		
Type/Frame	**M3BP 160MLC 2**	Calc. ref.	**3GZF021016-257**
Product code	**3GBP 161 430-ADG**		
Rated output P_N	**18.5** kW		
Type of duty	**S1(IEC) 100%**		

Voltage (V)	**400**	Current I_N (A)	**31.5**	Power factor at P_N	**0.92**
Frequency (Hz)	**50**	Speed (r/min)	**2932**	Efficiency (%) at P_N	**92**



Load characteristics (IEC 60034-2-1:2007)
Data based on situation 12/14/2015

All data subject to tolerances in accordance with IEC

ABB Motors and Generators Starting Curves

	Project	Location	
Department/Author	Customer name	Customer ref.	Item name **1.00001**
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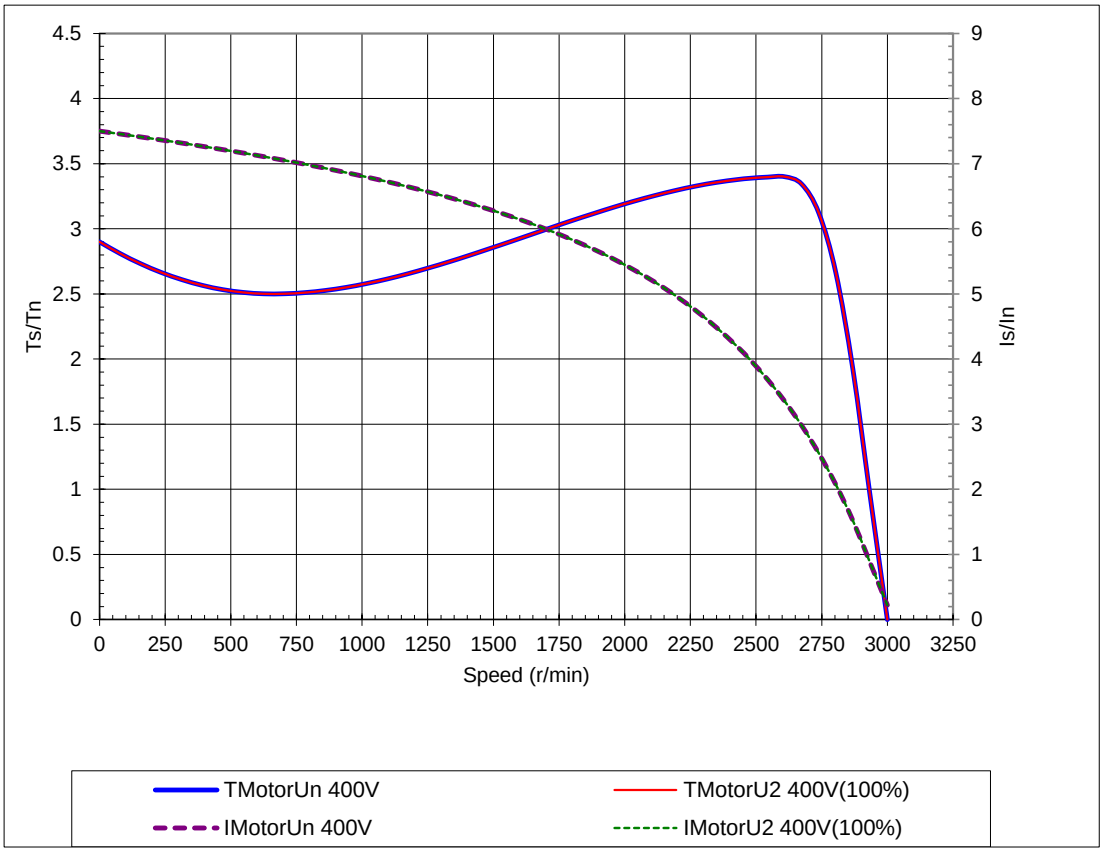
Type of product	**TEFC, 3-phase, squirrel cage induction motor**			
Type/Frame	**M3BP 160MLC 2**	Calc. ref.	3GZF021016-257	
Product code	**3GBP 161 430-ADG**	Frequency (Hz)	**50**	
Rated output P_N	**18.5** kW	Rated current I_N	**31.5**	A
Type of duty	**S1(IEC) 100%**			

J_{motor} (kgm2)	**0.063**	Voltage (V) 100%	***400***	Voltage (V)	***400V(100%)***
J_{load} (kgm2)		T_{start}/T_N	***2.9***	T_{start}/T_N	***2.9***
Speed (r/min)	**2932**	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***
Nbr. of Consecutive Starts at UN		T_{max}/T_n	***3.4***	T_{max}/T_n	***3.4***



Load characteristics (IEC 60034-2-1:2007)
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ABB Motors and Generators	Technical Data Sheet - DOL			
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No.	Definition	Data	Unit	Remarks	
1	Product	***TEFC, 3-phase, squirrel cage induction motor***			
2	Product code	**MM16182-PPN (3GBP161430-A**		Calc. ref.	3GZF021016-257
3	Type/Frame	***M3BP 160MLC 2***			
4	Mounting	***IM1001, B3(foot)***			
5	Rated output P_N	***18.5***	kW		
6	Service factor	***1***			
7	Type of duty	***S1(IEC) 100%***			
8	Rated voltage U_N	***415***	VD	± 5 % (IEC 60034-1)	
9	Rated frequency f_N	***50***	Hz	± 2 % (IEC 60034-1)	
10	Rated speed n_N	***2938***	r/min		
11	Rated current I_N	***30.9***	A		
12	No-load current	***7.6***	A		
13	Starting current I_s/I_N	***8***		Fullfilled IEC 60034-12 design N,H	
14	Nominal torque T_N	***60***	Nm		
15	Locked rotor torque T_S/T_N	***3.1***			
16	Maximum torque T_{max}/T_N	***3.6***			
17	Minimum torque T_{min}/T_N	***2.5***			
18	Speed at minimum torque	***660***	r/min		
	Load characteristics (IEC 60034-2-1:2007)	Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	*100*	**30.9**	**92.1 / IE2**	**0.9**
20		*75*	**23.4**	**93**	**0.89**
21		*50*	**16.7**	**92.8**	**0.83**
22		*Start*	**247**		**0.45**
23	Maximum starting time from hot	***15***	s		
24	Maximum starting time from cold	***27***	s		
25	Insulation class / Temperature class	***F / B***			
26	Ambient temperature	***40***	°C		
27	Altitude	***1000***	m.a.s.l.		
28	Enclosure	***IP55***			
29	Cooling system	***IC411 self ventilated***			
30	Bearing DE/NDE	***6309/C3 - 6209/C3***			
31	Type of Grease				
32	Sound pressure level (LP dB(A) 1m)	***69***	dB(A)	at load	
33	Moment of inertia J = ¼ GD2	***0.063***	kg-m2		
34	Balancing				
35	Vibration class				
36	Position of terminal box	***Top***			
37	Terminal box entries; no, dimens.				
38	Number of power terminals				
39	Direction of rotation	***CW or CCW***			
40	Total weight of motor	***170***	kg		
41	Dimension drawing no.				
42					
43					
44					
45					
Ex-motors					
46					
47					
48					
Option	Variant Codes / Definition				
49					
50					
51					
52					

Remarks:

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ABB Motors and Generators Load Curves

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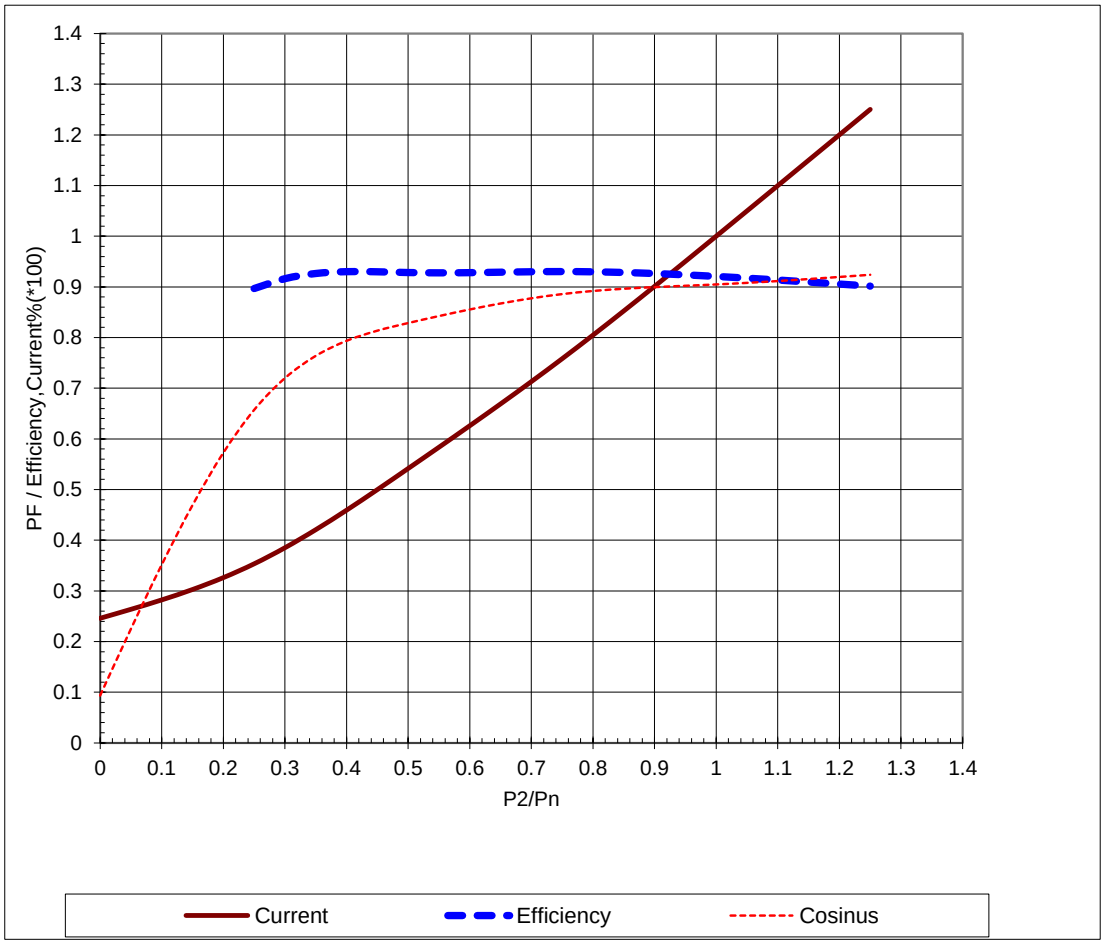
Product	**TEFC, 3-phase, squirrel cage induction motor**		
Type/Frame	**M3BP 160MLC 2**	Calc. ref.	**3GZF021016-257**
Product code	**3GBP 161 430-ADG**		
Rated output P_N	**18.5** kW		
Type of duty	**S1(IEC) 100%**		

Voltage (V)	**415**	Current I_N (A)	**30.9**	Power factor at P_N	**0.9**
Frequency (Hz)	**50**	Speed (r/min)	**2938**	Efficiency (%) at P_N	**92.1**



Load characteristics (IEC 60034-2-1:2007)
Data based on situation 12/14/2015

All data subject to tolerances in accordance with IEC

ABB Motors and Generators Starting Curves

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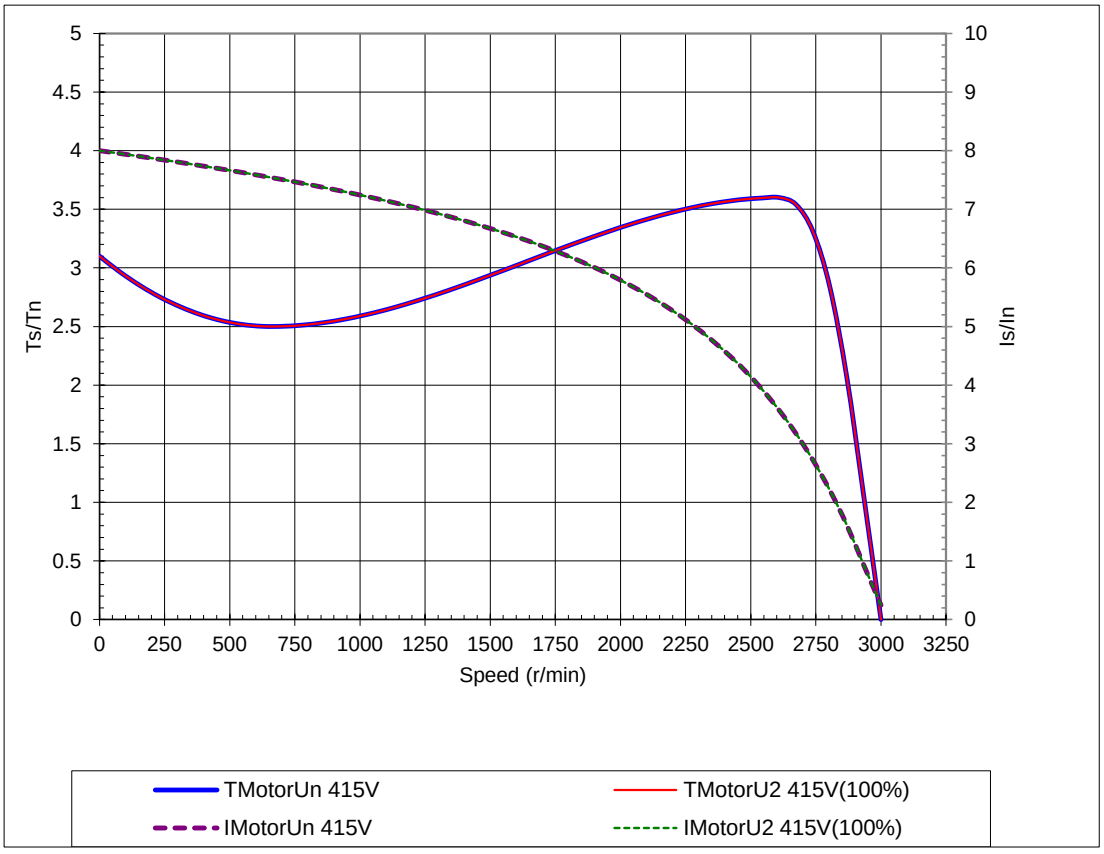
Type of product	**TEFC, 3-phase, squirrel cage induction motor**				
Type/Frame	**M3BP 160MLC 2**		Calc. ref.	3GZF021016-257	
Product code	**3GBP 161 430-ADG**		Frequency (Hz)	**50**	
Rated output P_N	**18.5** kW		Rated current I_N	**30.9**	A
Type of duty	**S1(IEC) 100%**				

J_{motor} (kgm2)	**0.063**	Voltage (V) 100%	***415***	Voltage (V)	***415V(100%)***
J_{load} (kgm2)		T_{start}/T_N	***3.1***	T_{start}/T_N	***3.1***
Speed (r/min)	**2938**	Starting time (s)		Starting time (s)	
T_N (Nm)	**60**	Speed (r/min)		Speed (r/min)	
T_{load} (Nm)		I_s/I_n	***8***	I_s/I_n	***8***
Nbr. of Consecutive Starts at UN		T_{max}/T_n	***3.6***	T_{max}/T_n	***3.6***



Load characteristics (IEC 60034-2-1:2007)
Data based on situation 12/14/2015

All data subject to tolerances in accordance with IEC

ABB Motors and Generators	Technical Data Sheet - DOL			
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No.	Definition	Data	Unit	Remarks	
1	Product	***TEFC, 3-phase, squirrel cage induction motor***			
2	Product code	**MM16182-PPN (3GBP161430-A**		Calc. ref.	3GZF021016-257
3	Type/Frame	***M3BP 160MLC 2***			
4	Mounting	***IM1001, B3(foot)***			
5	Rated output P_N	***18.5***	kW		
6	Service factor	***1***			
7	Type of duty	***S1(IEC) 100%***			
8	Rated voltage U_N	***690***	VY	± 5 % (IEC 60034-1)	
9	Rated frequency f_N	***50***	Hz	± 2 % (IEC 60034-1)	
10	Rated speed n_N	***2932***	r/min		
11	Rated current I_N	***18.3***	A		
12	No-load current	***4***	A		
13	Starting current I_s/I_N	***7.5***		Fullfilled IEC 60034-12 design N,H	
14	Nominal torque T_N	***60***	Nm		
15	Locked rotor torque T_S/T_N	***2.9***			
16	Maximum torque T_{max}/T_N	***3.4***			
17	Minimum torque T_{min}/T_N	***2.5***			
18	Speed at minimum torque	***660***	r/min		
	Load characteristics (IEC 60034-2-1:2007)	Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	*100*	**18.3**	**92.0 / IE2**	**0.92**
20		*75*	**13.9**	**93.1**	**0.9**
21		*50*	**9.7**	**93.1**	**0.86**
22		*Start*	**137**		**0.45**
23	Maximum starting time from hot	***15***	s		
24	Maximum starting time from cold	***27***	s		
25	Insulation class / Temperature class	***F / B***			
26	Ambient temperature	***40***	°C		
27	Altitude	***1000***	m.a.s.l.		
28	Enclosure	***IP55***			
29	Cooling system	***IC411 self ventilated***			
30	Bearing DE/NDE	***6309/C3 - 6209/C3***			
31	Type of Grease				
32	Sound pressure level (LP dB(A) 1m)	***69***	dB(A)	at load	
33	Moment of inertia J = ¼ GD2	***0.063***	kg-m2		
34	Balancing				
35	Vibration class				
36	Position of terminal box	***Top***			
37	Terminal box entries; no, dimens.				
38	Number of power terminals				
39	Direction of rotation	***CW or CCW***			
40	Total weight of motor	***170***	kg		
41	Dimension drawing no.				
42					
43					
44					
45					
Ex-motors					
46					
47					
48					
Option	Variant Codes / Definition				
49					
50					
51					
52					

Remarks:

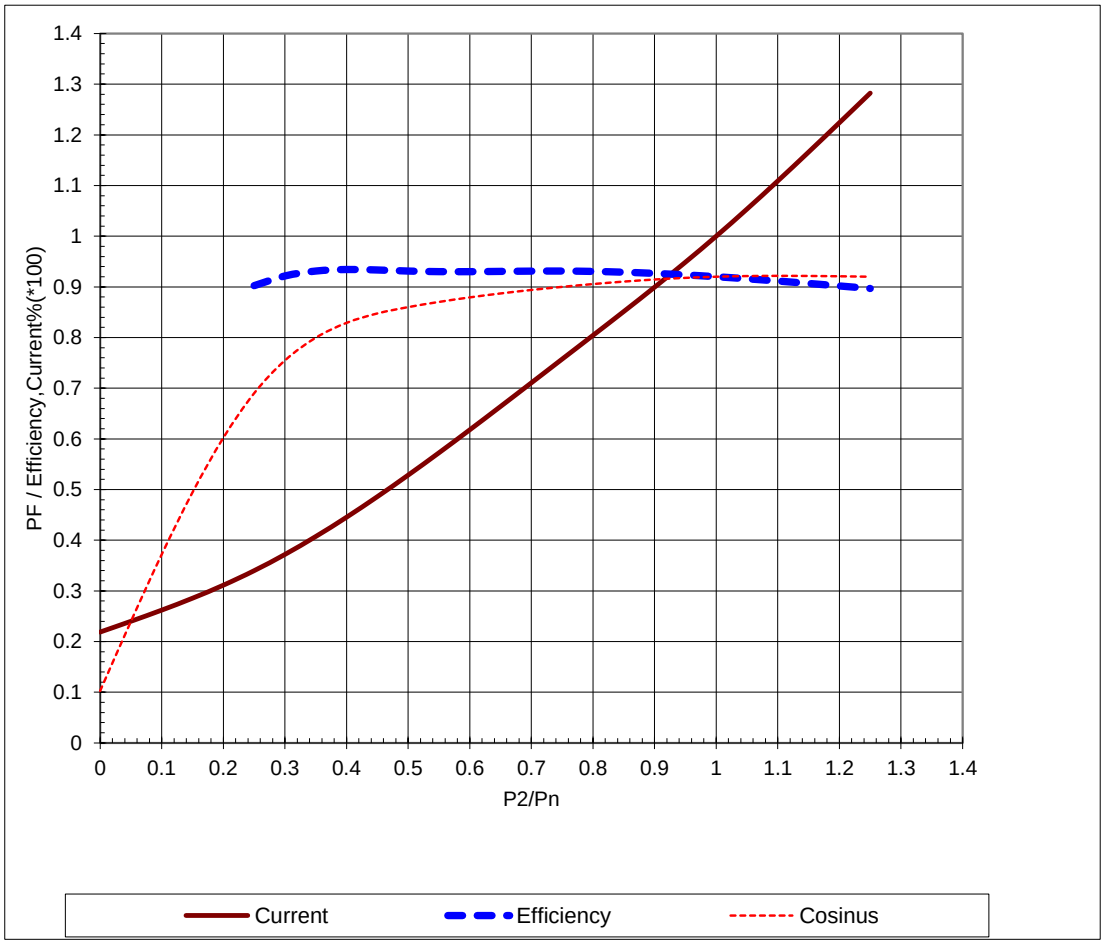
Data based on situation 12/14/2015
All data subject to tolerances in accordance with IEC
Guaranteed values on request

ABB Motors and Generators Load Curves

	Project	Location	
Department/Author	Customer name	Customer ref.	Item name **1.00001**
Our ref.	Rev/Changed by Date of issue **A** **2/1/2016**	Saving ident **untitled.xls**	Pages **2(3)**

Product	**TEFC, 3-phase, squirrel cage induction motor**		
Type/Frame	**M3BP 160MLC 2**	Calc. ref.	**3GZF021016-257**
Product code	**3GBP 161 430-ADG**		
Rated output P_N	**18.5** kW		
Type of duty	**S1(IEC) 100%**		

Voltage (V)	**690**	Current I_N (A)	**18.3**	Power factor at P_N	**0.92**
Frequency (Hz)	**50**	Speed (r/min)	**2932**	Efficiency (%) at P_N	**92**



Load characteristics (IEC 60034-2-1:2007)
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ABB Motors and Generators Starting Curves

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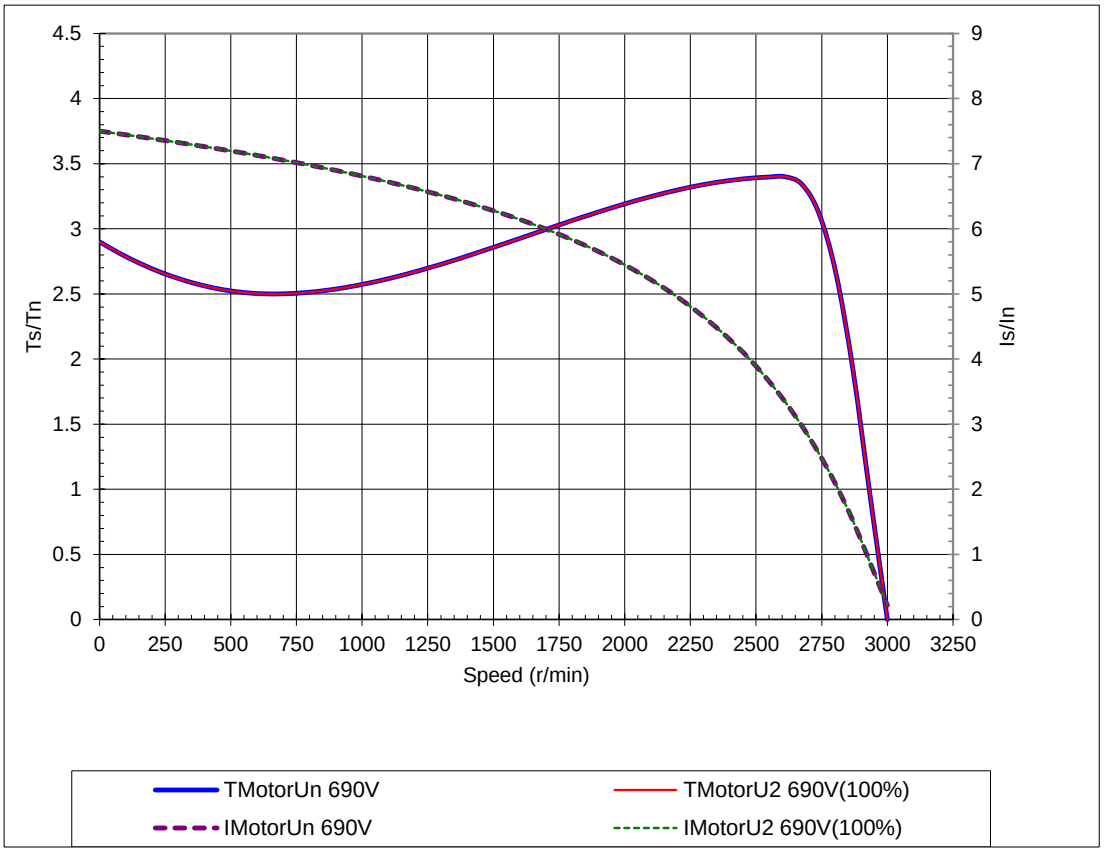
Type of product	**TEFC, 3-phase, squirrel cage induction motor**			
Type/Frame	**M3BP 160MLC 2**	Calc. ref.	3GZF021016-257	
Product code	**3GBP 161 430-ADG**	Frequency (Hz)	**50**	
Rated output P_N	**18.5** kW	Rated current I_N	**18.3**	A
Type of duty	**S1(IEC) 100%**			

J_{motor} (kgm2)	**0.063**	Voltage (V) 100%	***690***	Voltage (V)	***690V(100%)***
J_{load} (kgm2)		T_{start}/T_N	***2.9***	T_{start}/T_N	***2.9***
Speed (r/min)	**2932**	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***
Nbr. of Consecutive Starts at UN		T_{max}/T_n	***3.4***	T_{max}/T_n	***3.4***



Load characteristics (IEC 60034-2-1:2007)
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All data subject to tolerances in accordance with IEC

ABB Motors and Generators	Technical Data Sheet - DOL			
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No.	Definition	Data	Unit	Remarks	
1	Product	***TEFC, 3-phase, squirrel cage induction motor***			
2	Product code	**MM16182-PPN (3GBP161430-A**		Calc. ref.	3GZF021016-257
3	Type/Frame	***M3BP 160MLC 2***			
4	Mounting	***IM1001, B3(foot)***			
5	Rated output P_N	***18.5***	kW		
6	Service factor	***1***			
7	Type of duty	***S1(IEC) 100%***			
8	Rated voltage U_N	***460***	VD	± 5 % (IEC 60034-1)	
9	Rated frequency f_N	***60***	Hz	± 2 % (IEC 60034-1)	
10	Rated speed n_N	***3543***	r/min		
11	Rated current I_N	***27.4***	A		
12	No-load current	***6.5***	A		
13	Starting current I_s/I_N	***8.7***		Fullfilled IEC 60034-12 design N,H	
14	Nominal torque T_N	***50***	Nm		
15	Locked rotor torque T_S/T_N	***3.1***			
16	Maximum torque T_{max}/T_N	***3.8***			
17	Minimum torque T_{min}/T_N	***2.7***			
18	Speed at minimum torque	***792***	r/min		
	Load characteristics (IEC 60034-2-1:2007)	Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	*100*	**27.4**	**91.6 / IE2**	**0.92**
20		*75*	**21.1**	**92.1**	**0.9**
21		*50*	**15**	**91.3**	**0.85**
22		*Start*	**239**		**0.42**
23	Maximum starting time from hot	***15***	s		
24	Maximum starting time from cold	***27***	s		
25	Insulation class / Temperature class	***F / B***			
26	Ambient temperature	***40***	°C		
27	Altitude	***1000***	m.a.s.l.		
28	Enclosure	***IP55***			
29	Cooling system	***IC411 self ventilated***			
30	Bearing DE/NDE	***6309/C3 - 6209/C3***			
31	Type of Grease				
32	Sound pressure level (LP dB(A) 1m)	***77***	dB(A)	at load	
33	Moment of inertia J = ¼ GD2	***0.063***	kg-m2		
34	Balancing				
35	Vibration class				
36	Position of terminal box	***Top***			
37	Terminal box entries; no, dimens.				
38	Number of power terminals				
39	Direction of rotation	***CW or CCW***			
40	Total weight of motor	***170***	kg		
41	Dimension drawing no.				
42					
43					
44					
45					
Ex-motors					
46					
47					
48					
Option	Variant Codes / Definition				
49					
50					
51					
52					

Remarks:

Data based on situation 12/14/2015
All data subject to tolerances in accordance with IEC
Guaranteed values on request

ABB Motors and Generators Load Curves

	Project	Location	
Department/Author	Customer name	Customer ref.	Item name **1.00001**
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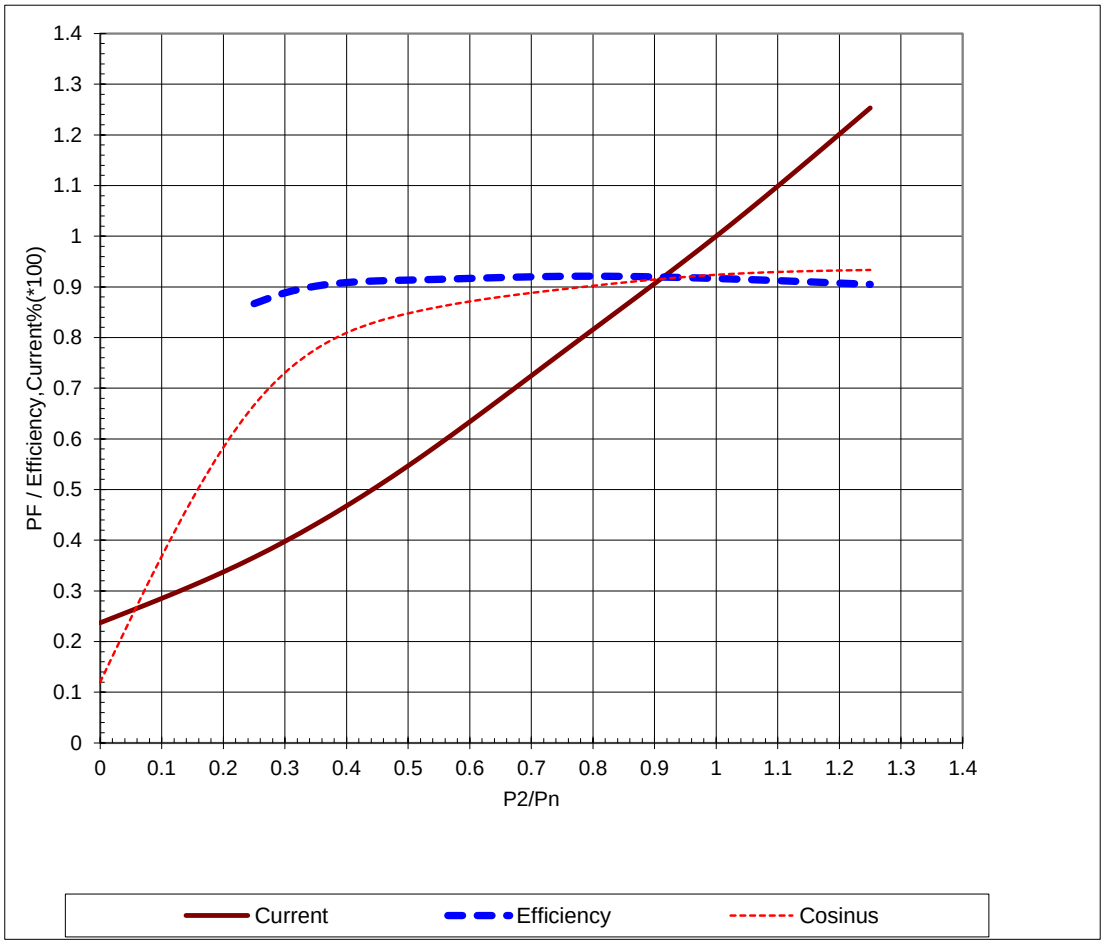
Product	**TEFC, 3-phase, squirrel cage induction motor**		
Type/Frame	**M3BP 160MLC 2**	Calc. ref.	**3GZF021016-257**
Product code	**3GBP 161 430-ADG**		
Rated output P_N	**18.5** kW		
Type of duty	**S1(IEC) 100%**		

Voltage (V)	**460**	Current I_N (A)	**27.4**	Power factor at P_N	**0.92**
Frequency (Hz)	**60**	Speed (r/min)	**3543**	Efficiency (%) at P_N	**91.6**



Load characteristics (IEC 60034-2-1:2007)
Data based on situation 12/14/2015

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ABB Motors and Generators Starting Curves

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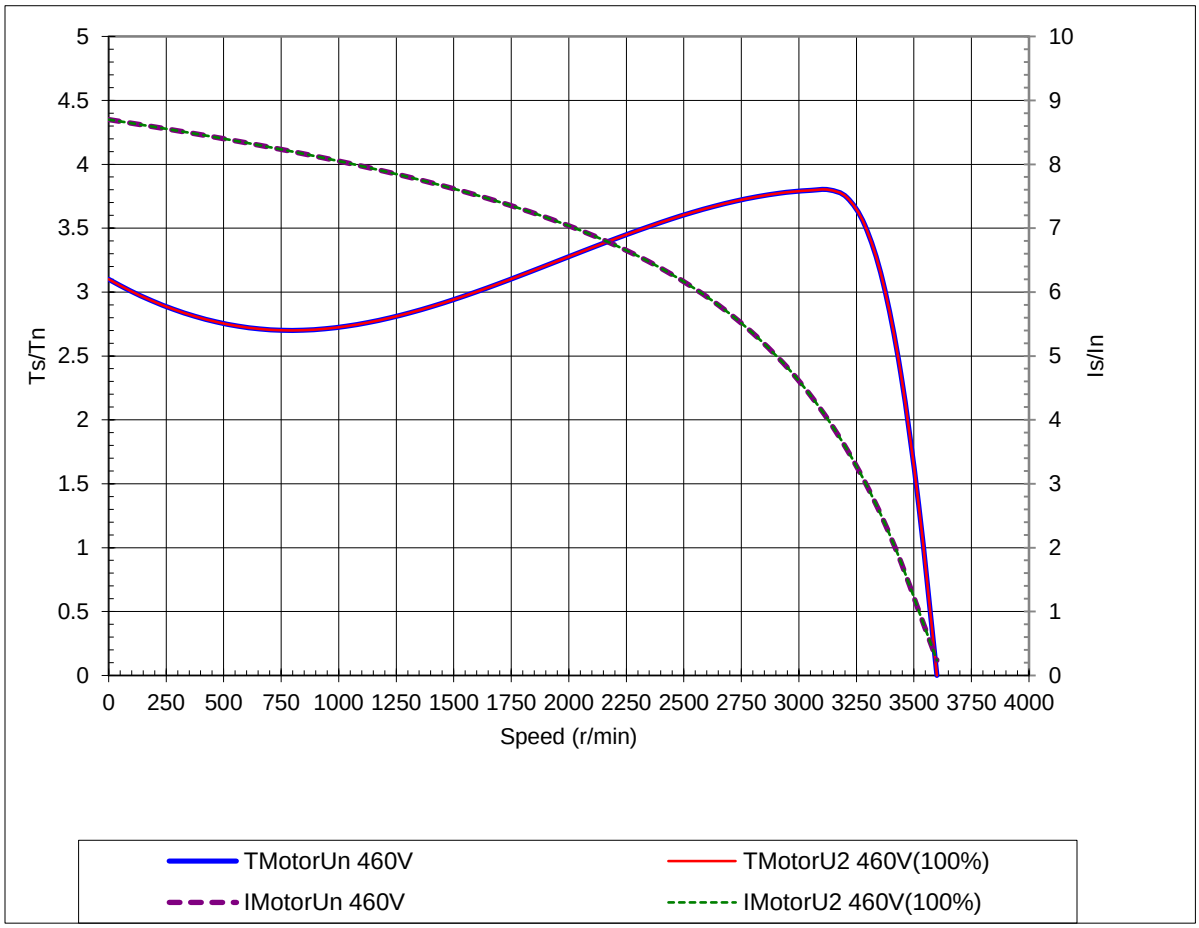
Type of product	**TEFC, 3-phase, squirrel cage induction motor**				
Type/Frame	**M3BP 160MLC 2**		Calc. ref.	3GZF021016-257	
Product code	**3GBP 161 430-ADG**		Frequency (Hz)	**60**	
Rated output P_N	**18.5** kW		Rated current I_N	**27.4**	A
Type of duty	**S1(IEC) 100%**				

J_{motor} (kgm2)	**0.063**	Voltage (V) 100%	***460***	Voltage (V)	***460V(100%)***
J_{load} (kgm2)		T_{start}/T_N	***3.1***	T_{start}/T_N	***3.1***
Speed (r/min)	**3543**	Starting time (s)		Starting time (s)	
T_N (Nm)	**50**	Speed (r/min)		Speed (r/min)	
T_{load} (Nm)		I_s/I_n	***8.7***	I_s/I_n	***8.7***
Nbr. of Consecutive Starts at UN		T_{max}/T_n	***3.8***	T_{max}/T_n	***3.8***



Load characteristics (IEC 60034-2-1:2007)
Data based on situation 12/14/2015

All data subject to tolerances in accordance with IEC