



Alternator Data Sheet Frame Size: HC5D

Characteristics			1-bearing weight		2-bearing weight			
Weights:	Stator assembly:		1448 lb	657 kg	1448 lb	657 kg		
	Rotor assembly:		1241 lb	563 kg	1179 lb	535 kg		
	Complete assembly:		3071 lb	1393 kg	3075 lb	1395 kg		
Maximum speed:			2250 rpm					
Excitation current:	Full load:		2.6 Amps					
	No load:		0.6 Amps					
Insulation system:	Class H throughout							
3 \emptyset Ratings (0.8 power factor)			50 Hz (winding no)					
			<u>190/380</u> (311)	<u>208/415</u> (311)	<u>200/400</u> (311)	<u>220/440</u> (311)	<u>220 Delta</u> (311)	<u>240 Delta</u> (311)
163° C rise ratings	@27C	kW	440	440	472	424	440	440
		kVA	550	550	590	530	550	550
150° C rise ratings	@40C	kW	412	412	460	412	412	412
		kVA	515	515	575	515	515	515
125° C rise ratings	@40C	kW	400	400	440	400	400	400
		kVA	500	500	550	500	500	500
105° C rise ratings	@40C	kW	360	360	396	360	360	360
		kVA	450	450	495	450	450	450
80° C rise ratings	@40C	kW	312	312	312	312	312	312
		kVA	390	390	390	390	390	390
3 \emptyset Reactances (per unit \pm 10%)			<u>190/380</u> (311)	<u>208/415</u> (311)	<u>200/400</u> (311)	<u>220/440</u> (311)	<u>220 Delta</u> (311)	<u>240 Delta</u> (311)
(Based on full load at 125° C rise rating)								
Synchronous			3.02	2.53	2.99	2.25	3.02	2.53
Transient			0.16	0.13	0.15	0.12	0.16	0.13
Subtransient			0.11	0.09	0.11	0.08	0.11	0.09
Negative sequence			0.19	0.16	0.19	0.14	0.19	0.16
Zero sequence			0.09	0.08	0.10	0.07	0.09	0.08
3 \emptyset Motor Starting (90% sustained voltage)			<u>190/380</u> (311)	<u>208/415</u> (311)	<u>200/400</u> (311)	<u>220/440</u> (311)	<u>220 Delta</u> (311)	<u>240 Delta</u> (311)
Maximum kVA			1150	1150	1265	1150	1150	1150
Time Constants (sec)			<u>190/380</u> (311)	<u>208/415</u> (311)	<u>200/400</u> (311)	<u>220/440</u> (311)	<u>220 Delta</u> (311)	<u>240 Delta</u> (311)
Transient			0.080	0.080	0.080	0.080	0.080	0.080
Subtransient			0.012	0.012	0.012	0.012	0.012	0.012
Open circuit			2.2	2.2	2.2	2.2	2.2	2.2
DC			0.018	0.018	0.018	0.018	0.018	0.018
Windings (@22° C)			<u>190/380</u> (311)	<u>208/415</u> (311)	<u>200/400</u> (311)	<u>220/440</u> (311)	<u>220 Delta</u> (311)	<u>240 Delta</u> (311)
Stator resistance	(Ohms L-L)		0.0098	0.0098	0.0098	0.0098	0.0098	0.0098
Rotor resistance	(Ohms)		1.77	1.77	1.77	1.77	1.77	1.77
Number of leads			12	12	12	12	12	12



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Weights:	Stator assembly:		1448 lb	657 kg	1448 lb	657 kg			
	Rotor assembly:		1241 lb	563 kg	1179 lb	535 kg			
	Complete assembly:		3071 lb	1393 kg	3075 lb	1395 kg			
Maximum speed:			2250 rpm						
Excitation current:	Full load:		2.6 Amps						
	No load:		0.6 Amps						
Insulation system:	Class H throughout								
3 Ø Ratings (0.8 power factor)			60 Hz (winding no)						
			<u>190/380</u>	<u>208/416</u>	<u>220/440</u>	<u>230/460</u>	<u>240/480</u>	<u>240 Delta</u>	<u>347/600</u>
			(311)	(311)	(311)	(311)	(311)	(311)	(17)
163° C rise ratings	@27C	kW	N/A	485	515	538	555	485	555
		kVA	N/A	606	644	673	694	606	694
150° C rise ratings	@40C	kW	428	470	500	524	540	470	540
		kVA	535	588	625	655	675	588	675
125° C rise ratings	@40C	kW	420	460	475	500	515	460	515
		kVA	525	575	594	625	644	575	644
105° C rise ratings	@40C	kW	376	415	430	450	470	415	470
		kVA	470	519	538	563	588	519	588
80° C rise ratings	@40C	kW	328	360	376	396	412	360	412
		kVA	410	450	470	495	515	450	515
3 Ø Reactances (per unit ± 10%)			<u>190/380</u>	<u>208/416</u>	<u>220/440</u>	<u>230/460</u>	<u>240/480</u>	<u>240 Delta</u>	<u>347/600</u>
(Based on full load at 125° C rise rating)			(311)	(311)	(311)	(311)	(311)	(311)	(17)
Synchronous			3.85	3.52	3.25	3.13	2.96	3.52	2.96
Transient			0.18	0.17	0.16	0.15	0.14	0.17	0.14
Subtransient			0.13	0.12	0.11	0.11	0.10	0.12	0.10
Negative sequence			0.25	0.22	0.20	0.20	0.19	0.22	0.19
Zero sequence			0.11	0.10	0.09	0.09	0.08	0.10	0.08
3 Ø Motor Starting			<u>190/380</u>	<u>208/416</u>	<u>220/440</u>	<u>230/460</u>	<u>240/480</u>	<u>240 Delta</u>	<u>347/600</u>
(90% sustained voltage)			(311)	(311)	(311)	(311)	(311)	(311)	(17)
Maximum kVA			1896	1896	1896	1625	1896	1896	1896
Time Constants			<u>190/380</u>	<u>208/416</u>	<u>220/440</u>	<u>230/460</u>	<u>240/480</u>	<u>240 Delta</u>	<u>347/600</u>
(sec)			(311)	(311)	(311)	(311)	(311)	(311)	(17)
Transient			0.080	0.080	0.080	0.080	0.080	0.080	0.080
Subtransient			0.012	0.012	0.012	0.012	0.012	0.012	0.012
Open circuit			2.2	2.2	2.2	2.2	2.2	2.2	2.2
DC			0.018	0.018	0.018	0.018	0.018	0.018	0.018
Windings			<u>190/380</u>	<u>208/416</u>	<u>220/440</u>	<u>230/460</u>	<u>240/480</u>	<u>240 Delta</u>	<u>347/600</u>
(@22° C)			(311)	(311)	(311)	(311)	(311)	(311)	(17)
Stator resistance	(Ohms L-L)		0.0098	0.0098	0.0098	0.0098	0.0098	0.0098	0.0098
Rotor resistance	(Ohms)		1.77	1.77	1.77	1.77	1.77	1.77	1.77
Number of leads			12	12	12	12	12	12	12



Alternator Data Sheet

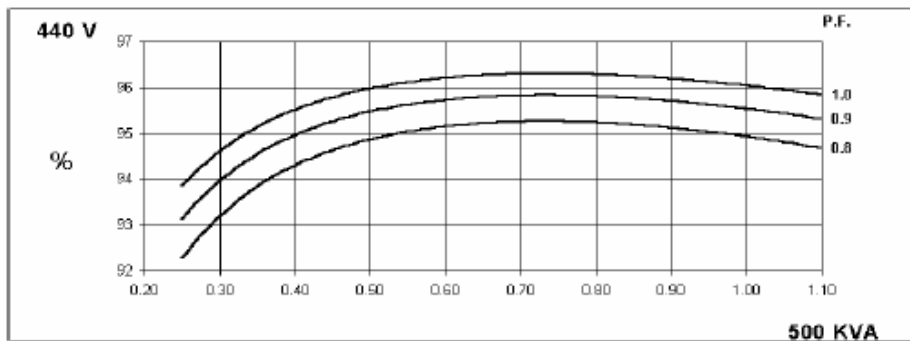
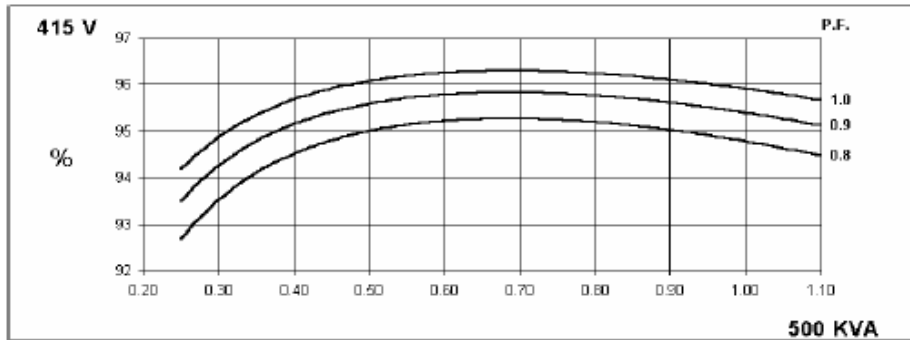
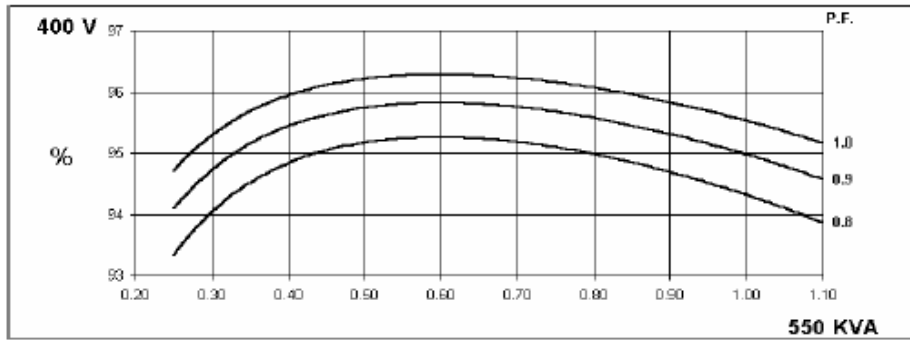
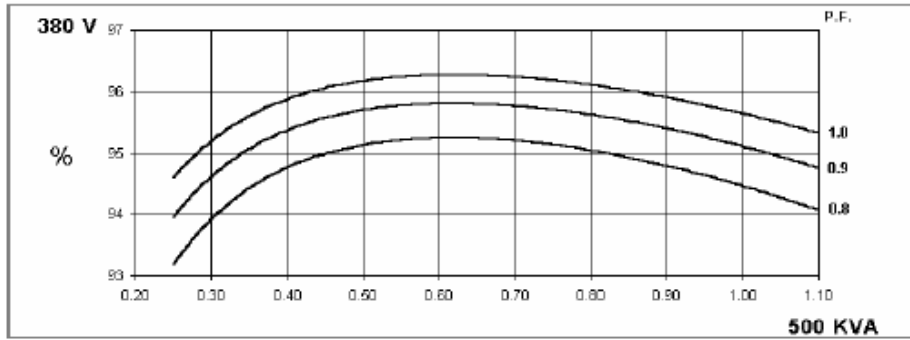
Frame Size: HC5D

**50
Hz**

HCI534D/544D

Winding 311

THREE PHASE EFFICIENCY CURVES





Alternator Data Sheet

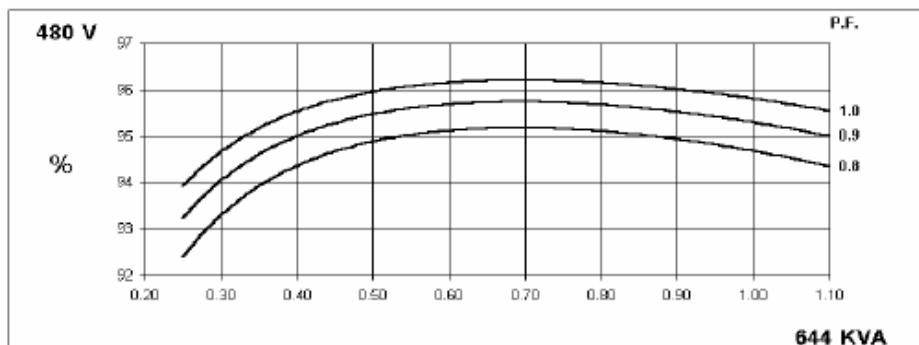
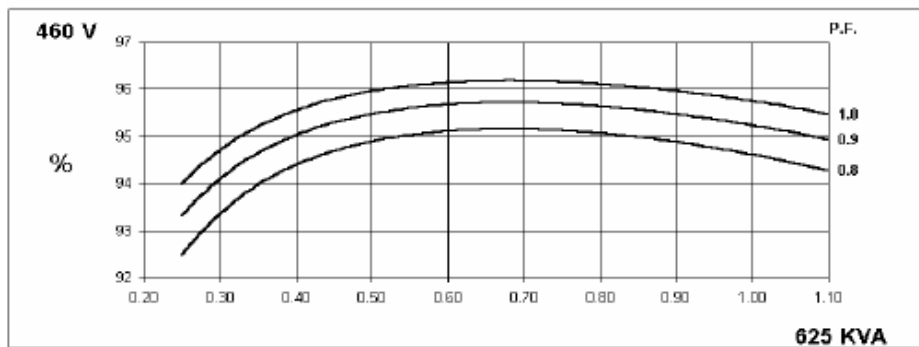
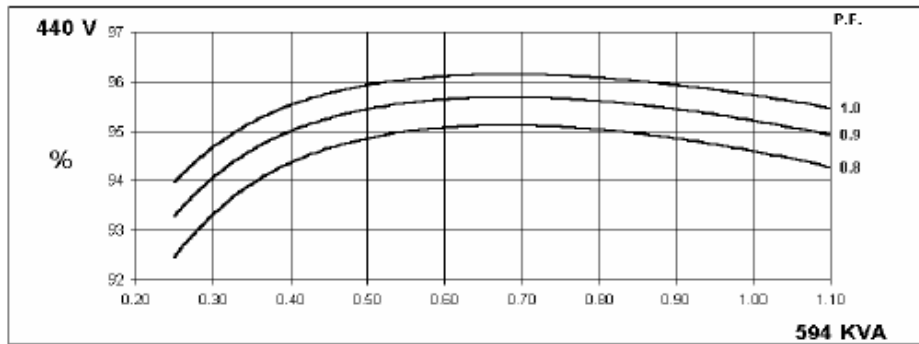
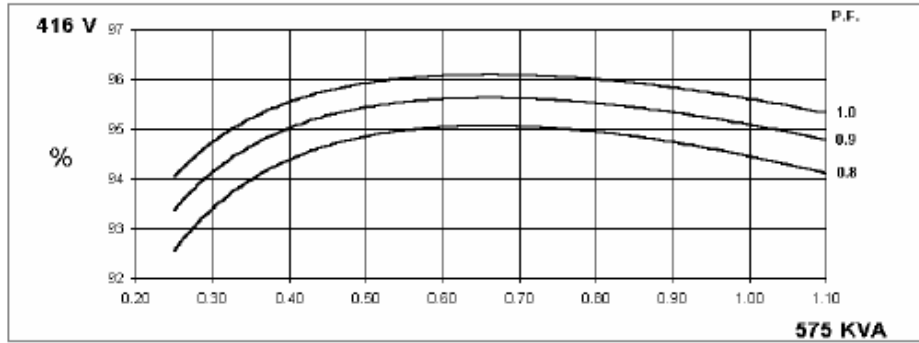
Frame Size: HC5D

**60
Hz**

HC1534D/544D

Winding 311

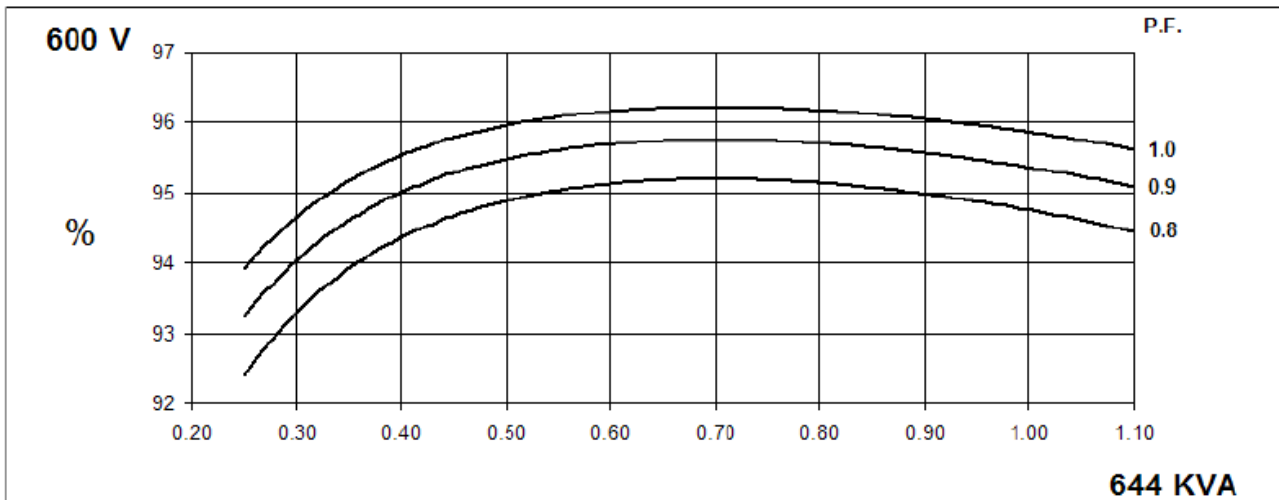
THREE PHASE EFFICIENCY CURVES





HCI534D/544D
Winding 17

THREE PHASE EFFICIENCY CURVES



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Alternator Data Sheet

Frame Size: HC5D

HCI534D/544D

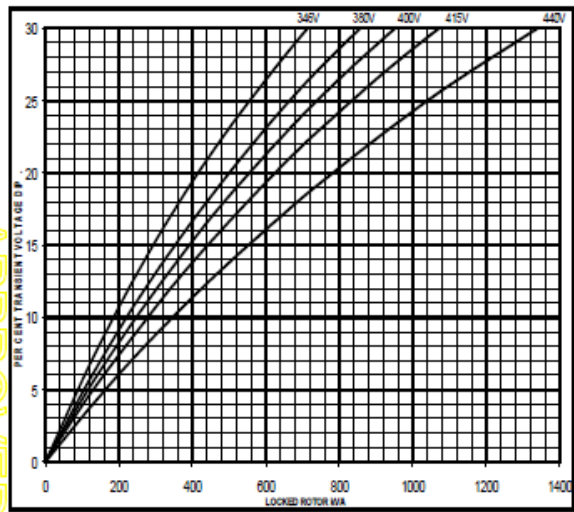
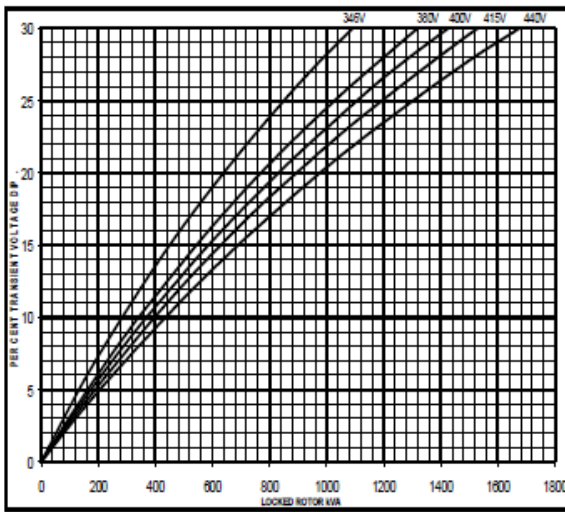
Winding 311

Locked Rotor Motor Starting Curve

50
Hz

MX

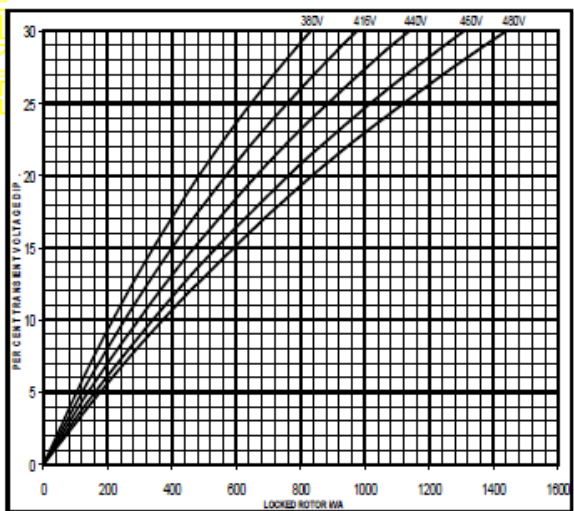
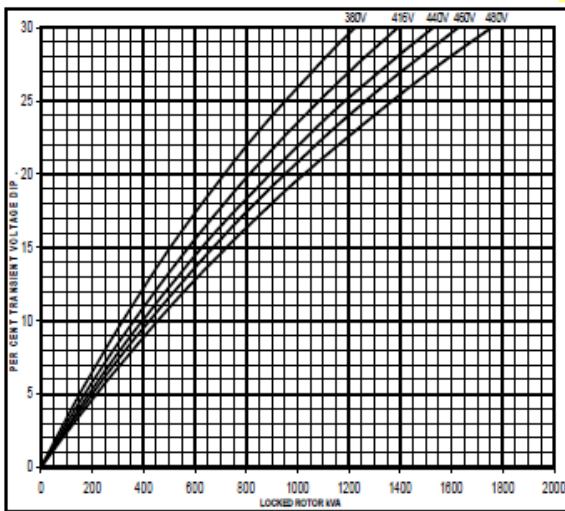
SX



60
Hz

MX

SX



APPROVED DOCUMENT



Alternator Data Sheet

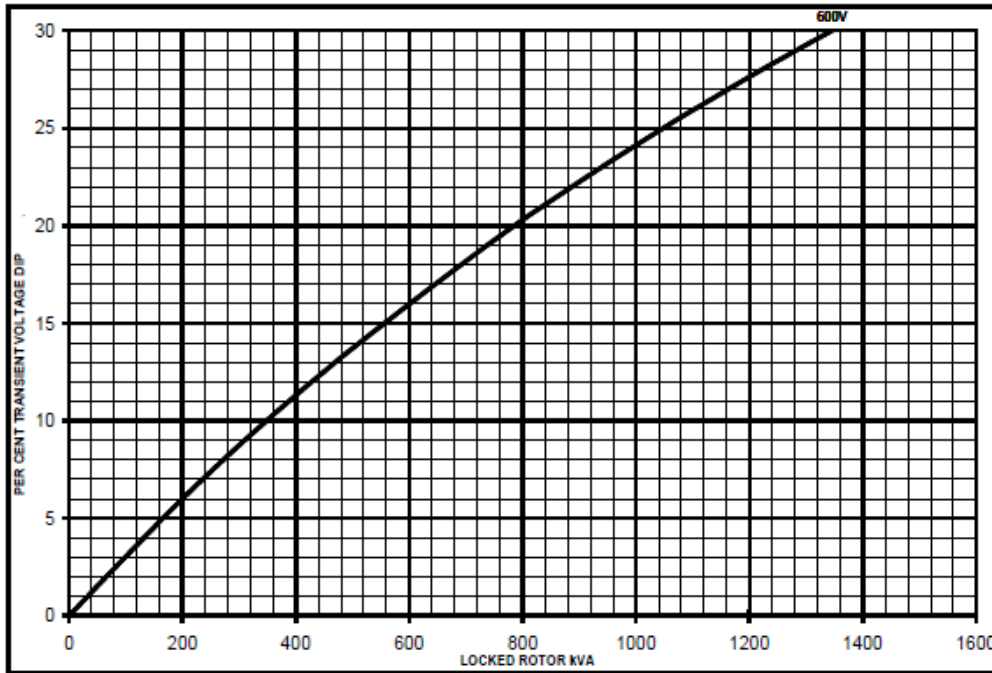
Frame Size: HC5D

HC1534D/544D

Winding 17

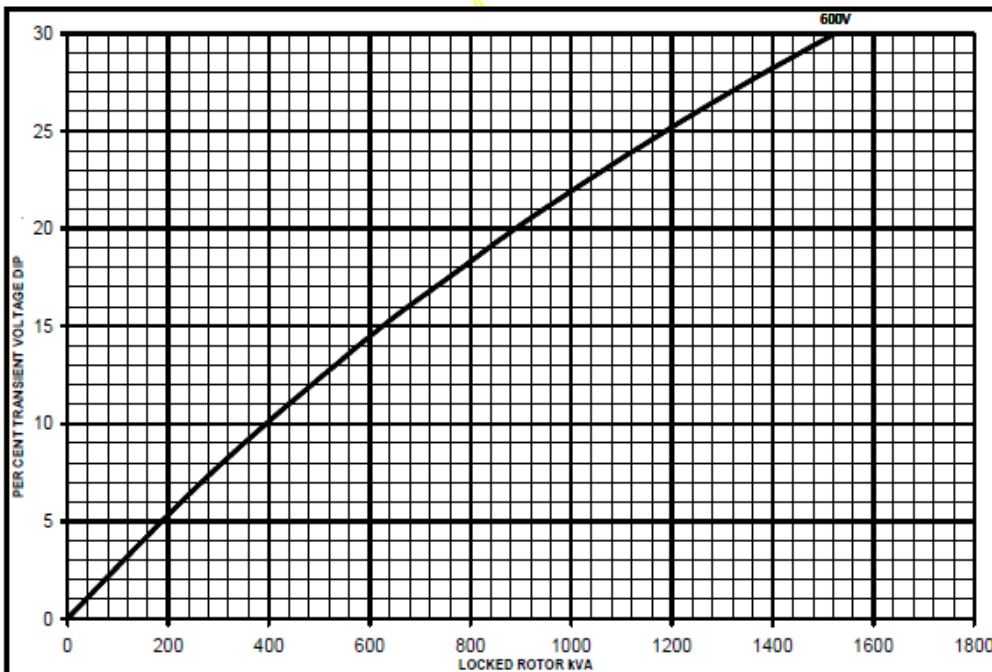
SX

Locked Rotor Motor Starting Curves



MX

OCUR





Alternator Data Sheet

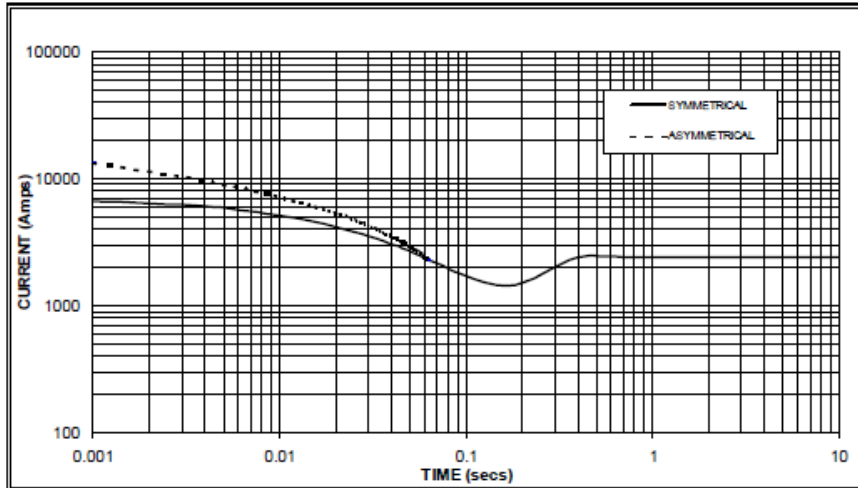
Frame Size: HC5D

HCI534D/544D

Winding 311

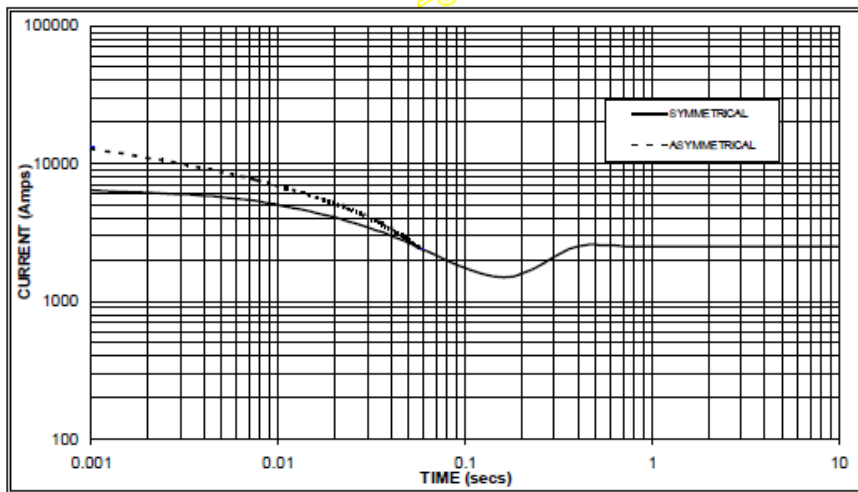
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.

**50
Hz**



Sustained Short Circuit = 2,400 Amps

**60
Hz**



Sustained Short Circuit = 2,500 Amps

Note 1

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380v	X 1.00	416v	X 1.00
400v	X 1.06	440v	X 1.06
415v	X 1.09	460v	X 1.12
440v	X 1.12	480v	X 1.20

The sustained current value is constant irrespective of voltage level

Note 2

The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

Note 3

Curves are drawn for Star (Wye) connected machines. For other connections the following multipliers should be applied to current values as shown :

Parallel Star = Curve current value X 2

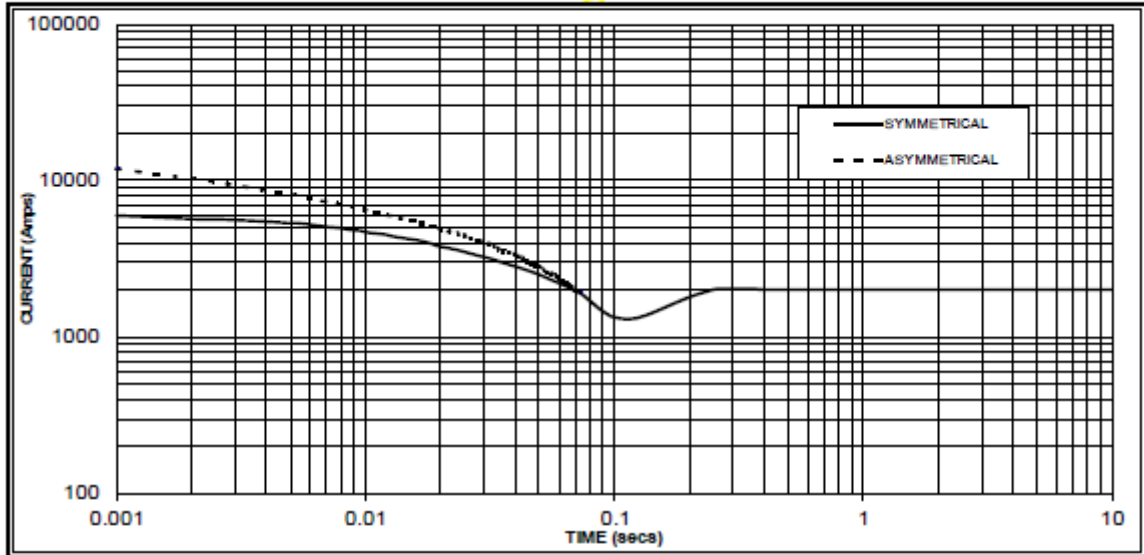
Series Delta = Curve current value X 1.732



Alternator Data Sheet

Frame Size: HC5D

Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.



Sustained Short Circuit = 2000 Amps

Note

The following multiplication factor should be used to convert the values from curve for the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged