



HYUNDAI IDEAL

ELECTRIC CO.

SYNCHRONOUS GENERATOR TECHNICAL DATA

Rating

kW	12000	Volts	13800	RPM	1500	S/N	071038
kVA	15000	Amps	628	Hz.	50	Temp Rise	105 °C
PF	0.80	Phase	3				

Reactances (per unit)

	Saturated	Unsaturated
Xd	1.623	1.960
Xd'	0.212	0.228
Xd''	0.157	0.165
Xq	0.985	0.985
Xq'	0.985	0.985
Xq''	0.157	0.165
X2	0.161	0.169
Xo	0.073	0.077
Xl	0.091	0.096

Reactance base 15,000 kVA

Time Constants (sec.)

Tdo'	8.580
Td'	0.926
Tdo''	0.047
Td''	0.035
Tqo'	n/a
Tq'	n/a
Tqo''	0.154
Tq''	0.025
Ta	0.109

Resistances and time constants at 130 °C

Resistances

R1	0.0047 pu
R2	0.0121 pu
Ro	0.0056 pu
Ra	0.0567 ohms
Rf	2.516 ohms
Short Circuit Ratio	0.616

Transient Voltage Response for Step Loading

Load	0.80 PF Load Applied or Removed		
	kVA	Volt. Dip	Volt. Rise
100%	15000	12.3%	13.0%
75%	11250	9.3%	9.5%
50%	7500	6.3%	6.7%
25%	3750	3.2%	4.0%

Motor Starting (Code F Inrush)		
HP	SkVA	Volt. Dip
4100	22960	24.5%
3075	17220	19.6%
2050	11480	14.0%
1025	5740	7.5%

Efficiency

kW Load	Nominal Efficiency %		kW Load	Guaranteed Efficiency %	
	0.80 PF	1.0 PF		0.80 PF	1.0 PF
115%	97.60	98.04	115%	97.5	97.9
100%	97.59	97.97	100%	97.4	97.8
75%	97.42	97.71	75%	97.3	97.6
50%	96.85	97.04	50%	96.7	96.9
25%	94.67	94.77	25%	94.4	94.5

Losses

in kW at rated load and nominal efficiency

Stator Copper	67.0	Core Loss	72.7
Rotor Copper	31.2	Friction & Windage	80.0
Stray Load	42.1	Exciter	3.4

Additional Data

Saturation factor	S1.0	0.207	x/r ratio	33.4
	S1.2	0.706	I ² t=	40 (K)
Inertia Constant	H	0.758	I ²	10.0% continuous
Damping Coefficient	D	18.9%		
Capacitance/phase	C	0.065 mFd		
Motoring Power		157.5 kW		



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SYNCHRONOUS GENERATOR DATA

S/N 071038 12000 KW 15000 KVA 0.80 P.F.
 105 °C RISE 13800 VOLTS 628 AMPS 1500 RPM

REACTANCES

PER UNIT ON 15000 KVA BASE

Direct Axis Synchronous	(Unsaturated)	Xd	1.960
Direct Axis Transient	(Rated Voltage)	X'd	0.212
Direct Axis Subtransient	(Rated Voltage)	X''d	0.157
Quadrature Axis Synchronous	(Unsaturated)	Xq	0.985
Quadrature Axis Subtransient	(Rated Voltage)	X''q	0.157
Negative Sequence	(Rated Voltage)	X2	0.161
Zero Sequence	(Rated Voltage)	Xo	0.073
Short Circuit Ratio		SCR	0.616

TIME CONSTANTS

Direct Axis Open Circuit Transient	T'do	8.580 Sec.
Direct Axis Short Circuit Transient	T'd	0.926 Sec.
Direct Axis Open Circuit Subtransient	T''do	0.047 Sec.
Direct Axis Short Circuit Subtransient	T''d	0.037 Sec.
Short Circuit Armature	Ta	0.109 Sec.

RESISTANCES

Armature (per phase at 25°C)	0.04037	Ohms
Field (at 25°C)	1.791	Ohms
Rotor Inertia	21880	Lb-Ft ²

EFFICIENCY

Load	Eff. at 0.80 P.F.
4/4	97.4%
3/4	97.2%
1/2	96.6%

DATE 10-Sep-07

rev. 1

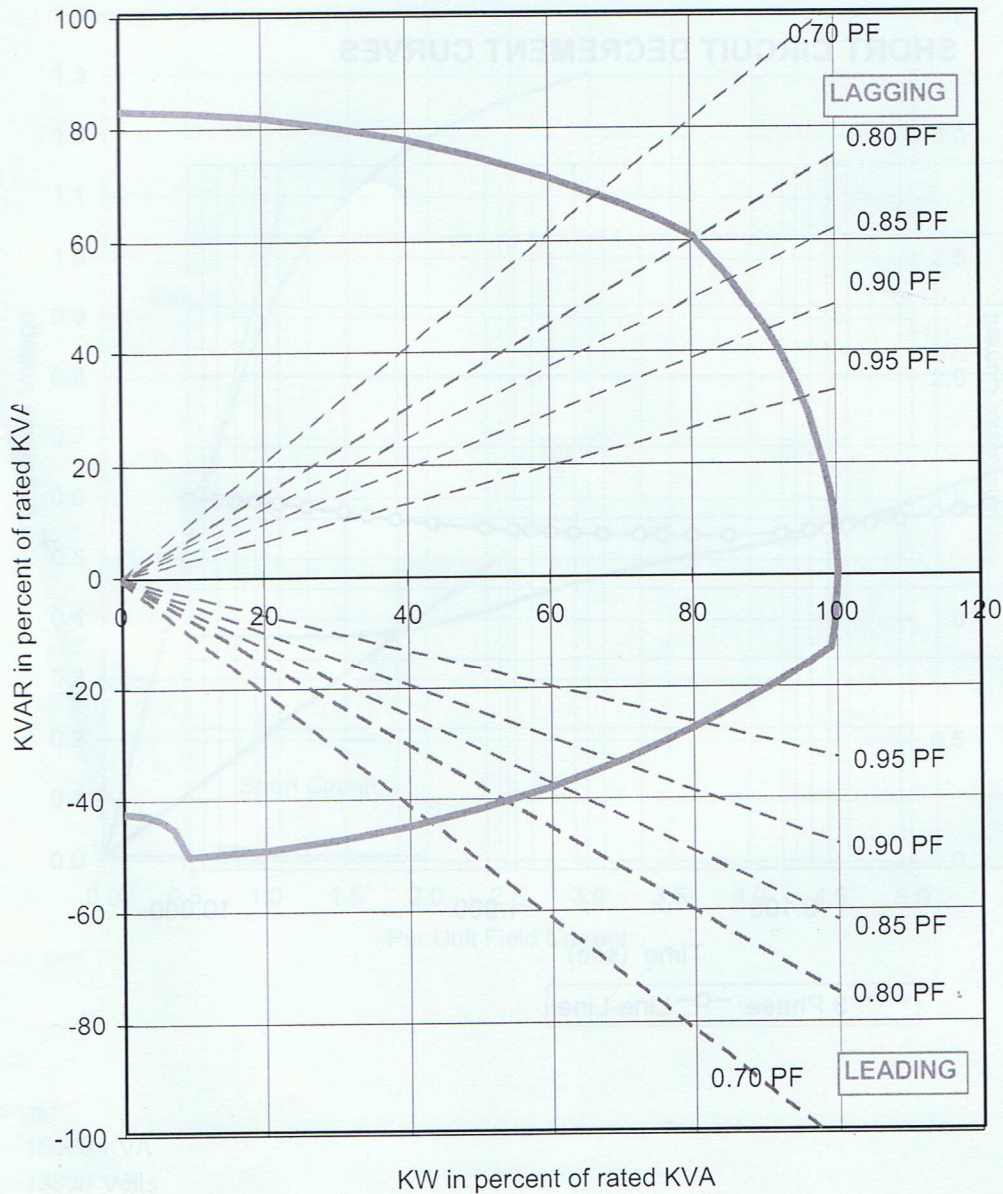
Ref: EE-4832



HYUNDAI IDEAL

ELECTRIC CO.

REACTIVE CAPABILITY CURVE



Rating:
15000 KVA
13800 Volts
628 Amps
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1500 RPM
S/N 071038

rev. 1

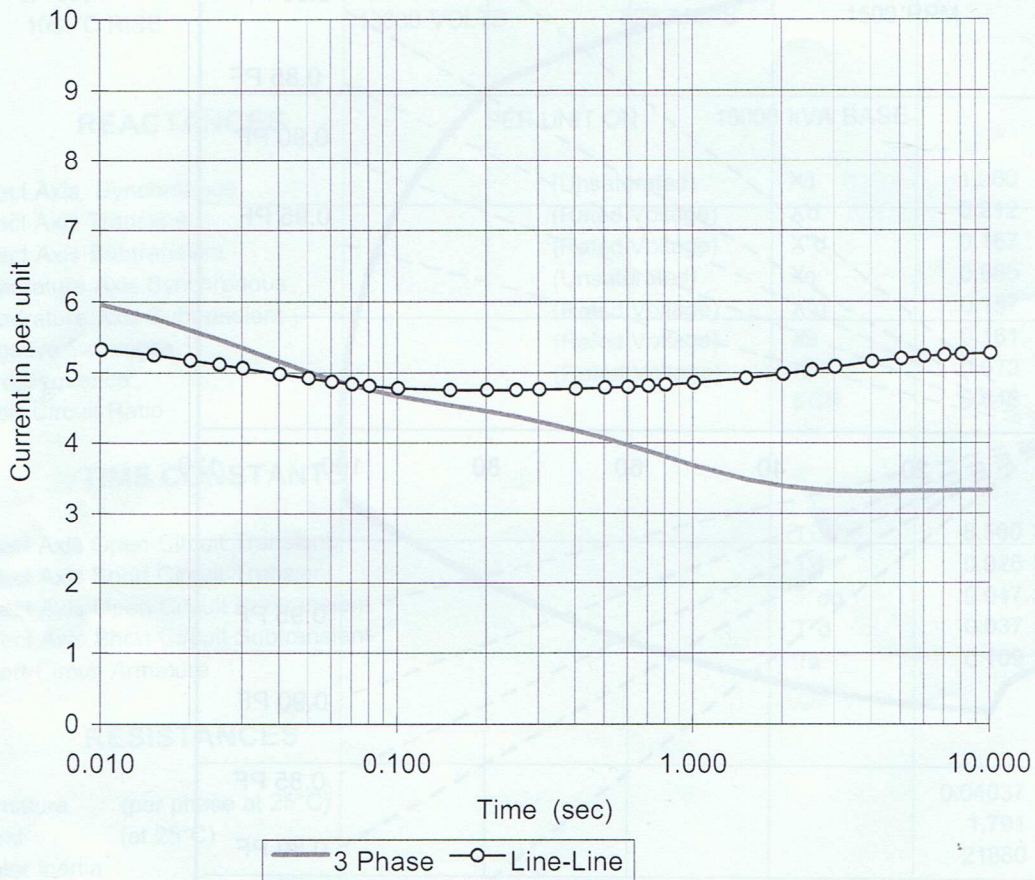
EE- 4832A



HYUNDAI IDEAL

ELECTRIC CO.

SHORT CIRCUIT DECREMENT CURVES



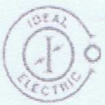
Rating:

- 15000 KVA
- 13800 Volts
- 628 Amps
- 0.80 P.F.
- 1500 RPM

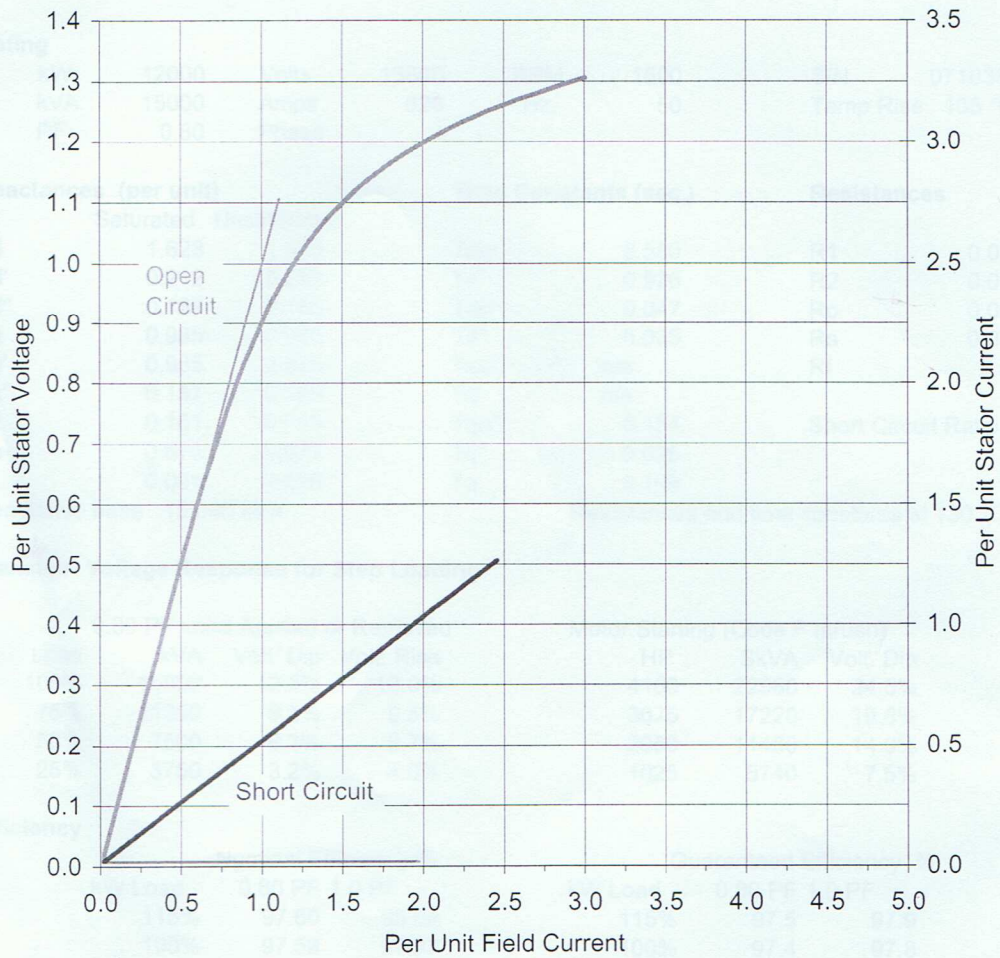
S/N 071038

rev. 1

EE- 4832B



SATURATION CURVES



Rating:

- 15000 KVA
- 13800 Volts
- 628 Amps
- 0.80 P.F.
- 1500 RPM

S/N 071038

rev. 1

EE- 4832D