

SYNGHROUNOUS GENERATOR HSG 710 MM4

INSTRUCTION FOR USE AND MAINTENANCE

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ABB Strömberg Drives		NI MITYS - NAME INSTRUCTIONS FOR GENERATOR		LAJI - TYPE HSG 710MM4	
HYV. - APPR. <i>M. W.</i>	TARK. - CHECK	KORVAA - SUPERSEDES	JAKELU DISTR.	HAKEMISTO FILE	LEHTI SHEET
TEKI - WRITTEN BY 92-06-01 MN		KORVATTU - SUPERSEDED BY		1126 HC 101	
				1	

STRÖMBERG

PTS/ES

DATE 92-02-08

BRUSHLESS SYNCHRONOUS GENERATOR
FOR LAND APPLICATION

REFERENCE NO. _____

CUSTOMER _____

OUTLINE DRW NO. _____

PERFORMANCE DATA (CALCULATED VALUES)

TYPE	HSG	710MM4	MOUNTING	IM	_____
RATING:			PROTECTION	IP	_____
OUTPUT		4820 KVA	COOLING	IC	_____
POWER FACTOR		0.80			
VOLTAGE		10500 V	WEIGHT		_____ KG
FREQUENCY		50 HZ			
CURRENT		265 A			
SPEED		1500 R/MIN			
OVERSPEED		1800 R/MIN			
MOMENT OF INERTIA (J)		230 KGM2			
STORED-ENERGY CONSTANT (H)		0.58 S			

STANDARDS	IEC	_____	AMBIENT TEMP.	_____	DEGR.-C
ALTITUDE		_____ M	COOLING WATER TEMP.	_____	DEGR.-C
INSULATION	CLASS F		TEMP. RISE	_____	

EFFICIENCY IN % :

LOAD		110%	100%	75%	50%	25%
POWER FACTOR 0.80	96.70	96.71	96.58	95.95	93.41	
POWER FACTOR 1.00	97.54	97.55	97.42	96.90	94.81	

REACTANCES IN %

XD = 193	XD' = 24.9	XQ'' = 22.1	X0 = 8.8
XQ = 84	XD'' = 16.4	X2 = 19.2	XP = 18.7

RESISTANCES AT 20 DEGR.-C

STATOR WINDING	R1 =	0.1450 OHM
FIELD WINDING	RF =	0.330 OHM
EXCITER FIELD	RM =	21.4 OHM

TIME CONSTANTS (SEC.) AT 75 DEGR.-C

TDO' = 4.0	TD' = 0.60	TQO'' = 0.060	TA = 0.09
TDO'' = 0.017	TD'' = 0.014	TQ'' = 0.016	

SHORT-CIRCUIT RATIO 0.61

SUSTAINED SHORT-CIRCUIT CURRENT

RATED EXCITATION	1.6 P.U.
WITH VOLTAGE REGULATOR	> 3.0 P.U.

SUDDEN SHORT-CIRCUIT CURRENT

SYMMETRIC R.M.S. VALUE	1600 A
PEAK VALUE	1100 A

ALLOWED STARTING-KVA

POWER FACTOR	0.1	0.4	0.8
VOLTAGE DROP MAX 15%	3150	3350	4650
VOLTAGE DROP MAX 20%	4350	4650	

WITH SUDDEN CHANGE OF RATED LOAD

VOLTAGE DROP	-14 %
VOLTAGE RISE	+18 %

STRÖMBERG

PTS/ES

DATE 92-02-08

TYPE HSG ___ 710MM4

STEADY STATE REACTIVE LOADING

AT RATED EXCITATION	3550 KVAR (IND.)
AT ZERO EXCITATION	2400 KVAR (CAP.)

FULL LOAD TORQUE 30500 NM

SUDDEN SHORT-CIRCUIT AIR GAP TORQUES

2-PHASE	795 % (PEAK VALUE)
3-PHASE	690 % (PEAK VALUE)

EXCITATION

EXCITER FIELD

NO LOAD	1.0 A /	26.0 V
RATED LOAD	2.9 A /	79.5 V

BEARINGS

TYPE: D-END

N-END

LUBRICATION

LUBE OIL REQUIRED

_____	_____	_____
_____	_____	_____
_____	L/MIN	_____ BAR

HEAT EXCHANGER

COOLING WATER REQUIRED

COOLING WATER PRESSURE DROP

_____	M3/H
_____	BAR

SPACE HEATERS

_____	W	_____	V
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NO. OF TEMPERATURE DETECTORS

ST-WINDING PT-100

BEARINGS PT-100

COOL.MED. PT-100

ADDITIONAL CONTROL DEVICES:

REMARKS:

SHORT-CIRCUIT TORQUES (T/TN)

TN = 30685 NM

HS 710MM4

TMAX (3-PHASE)/TN = 5.5

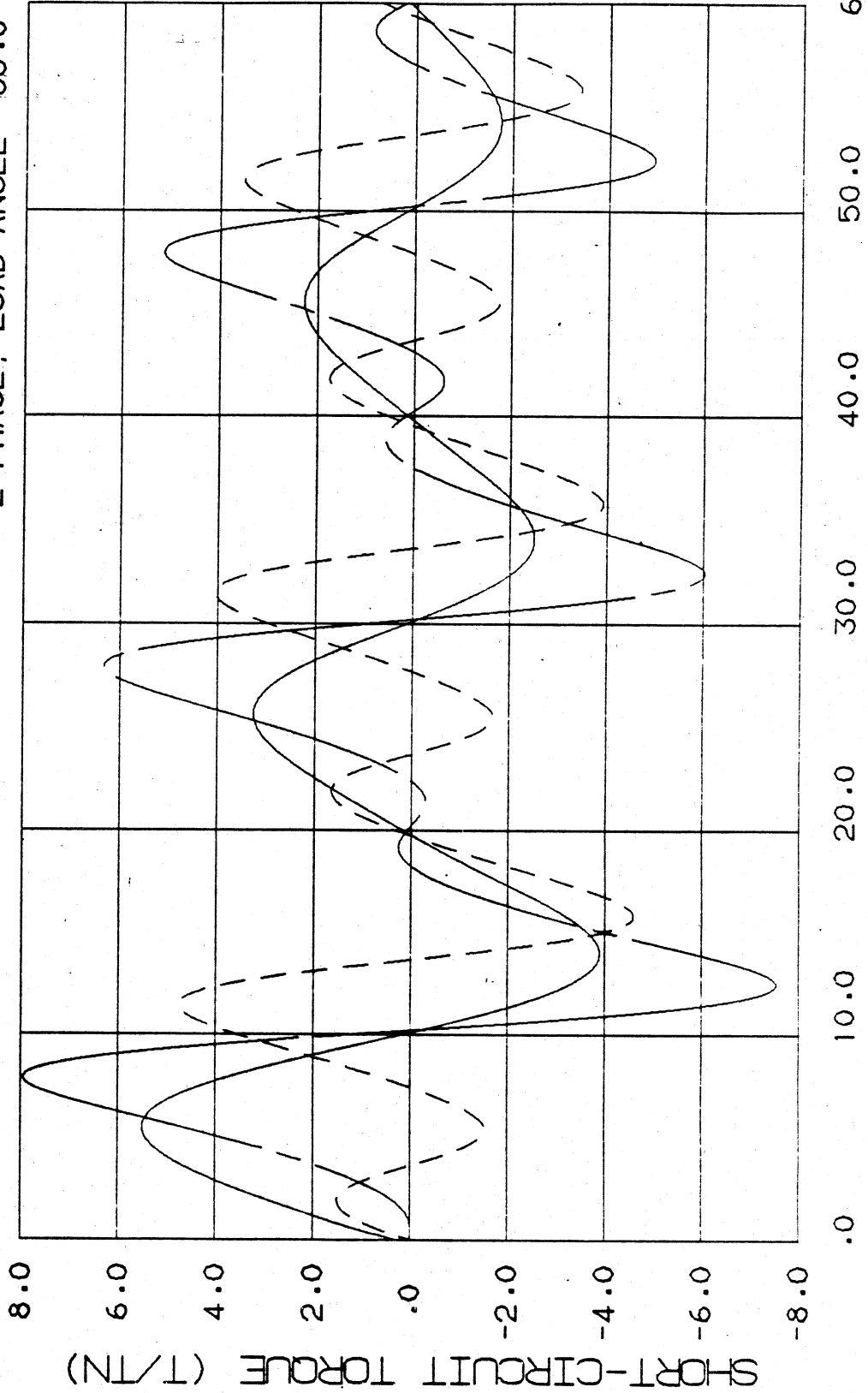
TMAX (2-PHASE)/TN = 7.9

1126HC101

—— 3-PHASE, LOAD ANGLE = 24.1

- - - 2-PHASE, LOAD ANGLE = 24.1

—— 2-PHASE, LOAD ANGLE = 86.0



**OUTPUT CAPABILITIES OF GENERATOR HSG 710MM4
AS FUNCTION OF COOLING AIR TEMPERATURE AT 6000 - 6300 V**

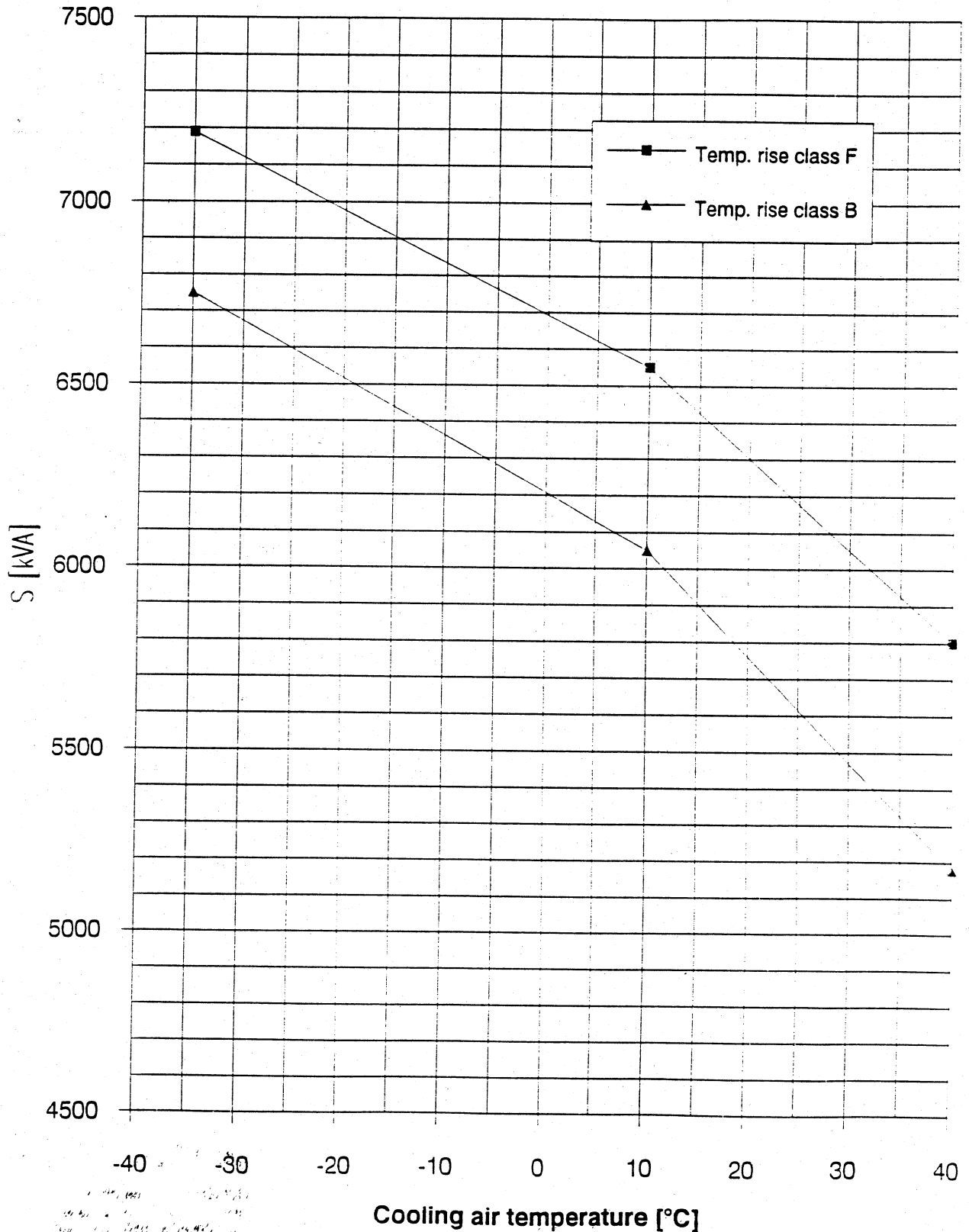


ABB STRÖMBERG DRIVES

PRUEFFPROTOKOLL A15

1(1)

BESTELLER TUMA TURBOMACH SA

HSG 710MM4

4544056

ORDER 9111-1577/"MEISSEN" - 1126HC101

92-05-08

LEISTUNGSSCHILD-ANGABEN

3-PHASE GENERATOR HSG 710MM4 IM 1101 NR. 4544056
 4820 KVA S1 10500 V Y 265 A COS FI 0.80 50 HZ
 1500 (NR 1800) R/MIN <--- ERREGUNG 74.0 V 3.6 A
 ISOLATIONSKLASSE F
 UMGEBUNGSTEMPERATUR MAX. 40 C

LUFTSPALT MASCHINE: 12.9 - 12.1 MM
 ERREGUNGSGENERATOR 3.7 - 2.8 MM

ISOLATIONSWIDERSTANDS- MESSUNG IM UMGEBUNGSTEMPERATUR T = 24 C	STÄNDERWICKLUNG	2000 MOHM	(1000 V DC)
	LÄUFERWICKLUNG	10000 MOHM	(1000 V DC)
	ERREGERWICKLUNG	100000 MOHM	(1000 V DC)
	HEIZWIDERSTAND	8000 MOHM	(500 V DC)
	PT-100 (STÄNDERW.)	100000 MOHM	(500 V DC)
	PT-100 (LAGER)	3000 MOHM	(500 V DC)

WIDERSTANDSMESSUNG IM UMGEBUNGSTEMPERATUR T = 24 C	MASCHINE	ERREGUNGSGENERATOR
	UV 0.290700 OHM	UV 0.009158 OHM
	UW 0.290800 OHM	UW 0.009150 OHM
	VW 0.291200 OHM	VW 0.009144 OHM
	RR 0.3166 OHM	RM 18.64 OHM

PHASE-ORDNUNG U - V - W DREHRICHTUNG: <---
 L3 - L2 - L1 (ENGESETZT DEM UHRZEIGERSINN)

LEERLAUFFUNKT U1 = 10488. V IM = 1.1 A 1500 R/MIN 33 C

KURZSCHLUSSPUNKT I1 = 265.0 A IM = 2.0 A 1500 R/MIN 49 C

UEBERDREHZAHL 1800 R/MIN 2 MIN

HOCHSPANNUNGSPRUEFUNG 50 HZ, 1 MIN	STÄNDERWICKLUNG	24000 V
	LÄUFERWICKLUNG	2000 V
	ERREGERWICKLUNG	2000 V
	HEIZWIDERSTAND	1500 V
	PT-100 (STÄNDERW.)	1500 V
	PT-100 (LAGER)	500 V

ISOLATIONSWIDERSTANDS- MESSUNG NACH DER HOCHSPANNUNGSPRUEFUNG T = 30 C	STÄNDERWICKLUNG	2000 MOHM	(1000 V DC)
	LÄUFERWICKLUNG	5000 MOHM	(1000 V DC)
	ERREGERWICKLUNG	50000 MOHM	(1000 V DC)
	HEIZWIDERSTAND	8000 MOHM	(500 V DC)
	PT-100 (STÄNDERW.)	100000 MOHM	(500 V DC)
	PT-100 (LAGER)	2000 MOHM	(500 V DC)

FUER DEN HERSTELLER 92-05-08

SPANNUNGSREGLER:

Heli Anietz

TYP: GX-300PR
 SERIE NR: 92682

FUER DEN BESTELLER 92-05-08

Customer Tilaja TUMA TURBOMACH SA		Jakelur.	Type Laji HSG 710MM4
Work number Työnumero 1126HC101		Serial nr. Valm.n:o 4544056	
Measured Mitannut UK/RV	Reported Selostanut	Date Päiväys 1992-05-07	
Approved Hyväksynyt	<i>Helmi Niemelä</i>	Sheet nr. Pk. n:o A12	Page/pages Lehti 1/1

VOLTAGE REGULATOR SETTINGS AND TESTS

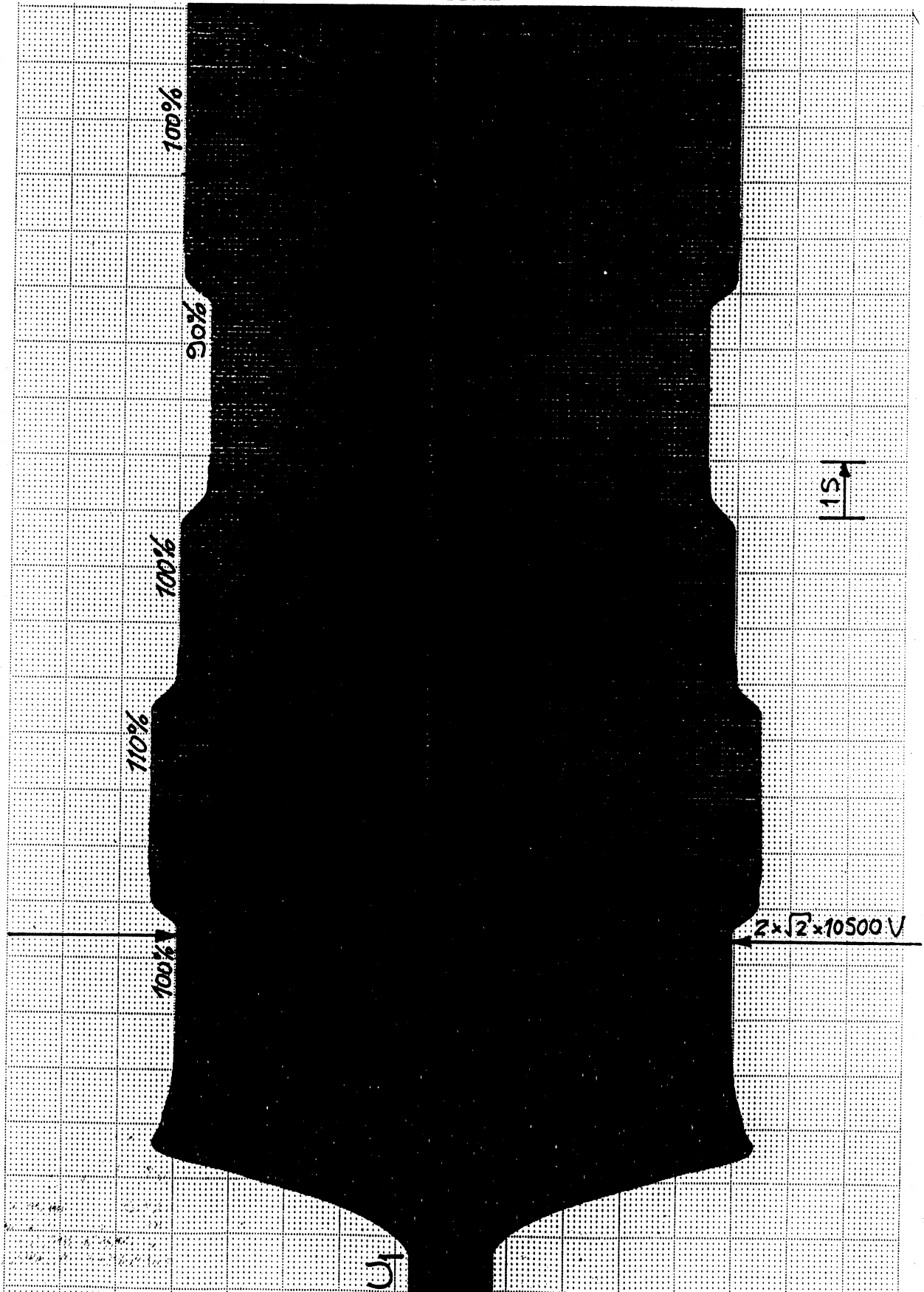
Manufacturer of regulator: **International Electric**
 Regulator type: **GX-300PR**
 Serial nr: **92682**

1. Voltage setting range	$0.9 - 1.1 \cdot U_{1N}$
2. Underfrequency limit setting	45 Hz
3. Setting of amplification	5
4. Initial voltage build-up and regulation speed at no-load	see special test sheet
5. Sustained short-circuit current	$I_1 = 840.0 \text{ A}$ $I_m = 6.8 \text{ A}$ $n = 1360 \text{ r/min}$

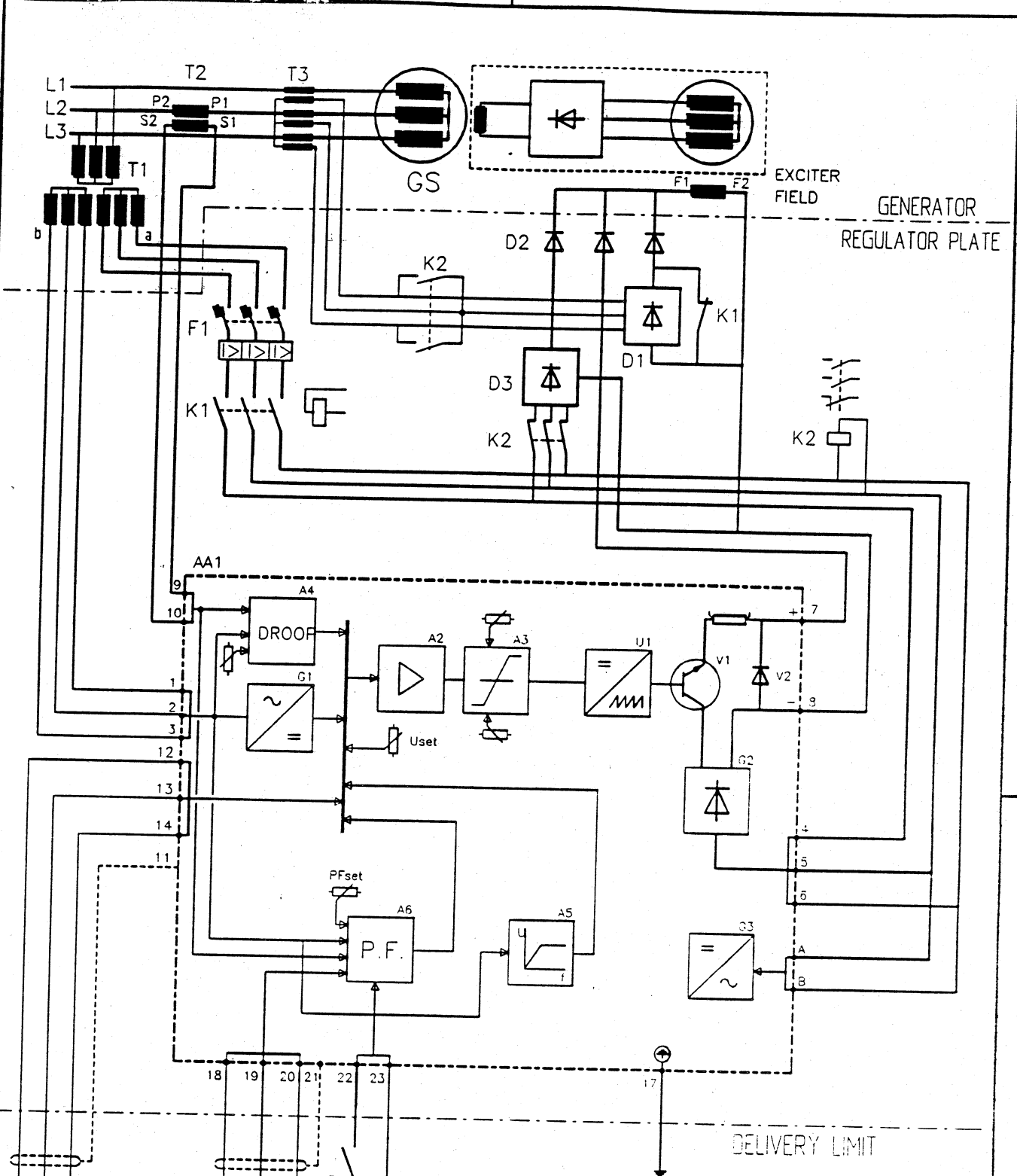
I_1 = stator current
 U_1 = stator line-to-line voltage
 U_{1N} = 10500 V (rated stator voltage)
 I_m = excitation current
 n = speed

Customer Tilaaaja	TUMA TURBOMACH SA	Jakelur.	Type Laji	HSG 710MM4
Work number Työnumero	1126HC101	Serial nr. Valm.n:o	4544056	
Measured Mitannut	UK/RV	Reported Selostanut	Date Päiväys	1992-05-07
Approved Hyväksynyt	<i>Hele Umveltz</i>		Sheet nr. Pk n:o	A13
			Page/pages Lehti	1/1

**AVR TEST: VOLTAGE RISE AND REGULATION
SPEED AT NO-LOAD**



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* Voltage / P.F. regulator with transformer supply and excit.boost

Date 92-04-15	General tolerance	Title GX 300 PRB	Scale
Prepared M. NISSINEN	Responsible department PTC	34 GX 115	Language EN
Reviewed Approved	Distribution		Size
Changed	Weight	Document No. 34GX115	Revision A
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