

JCBENERGY
GENERATOR

SYNCHRONOUS ALTERNATORS



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160 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.071 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6306 - 2RZ

GROUP	JNP 160S	JNP 160M	JNP 160L	JNP160
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	10	8	15	12	16	12,8	21	16,8
400/231	10	8	15	12	16	12,8	21	16,8
415/240	11	8,8	16	12,8	17	13,6	22	17,6
1 Phase	6,6	5,3	8,3	6,7	10	8	14	11,2

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	11	8,8	16,5	13,2	17,5	14,0	23	18,4
400/231	11	8,8	16,5	13,2	17,5	14,0	23	18,4
415/240	12	9,6	17,5	14	18,5	14,8	24	19,2
1 Phase	7,5	6	11	8,8	12	9,6	15	12

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	X _d	1,82	1,775	1,755	1,736
DIR. AXIS TRANSIENT	X' _d	0,182	0,18	0,178	0,178
DIR. AXIS SUBTRANSIENT	X'' _d	0,114	0,112	0,113	0,112
QUAD. AXIS REACTANCE	X _q	0,895	0,88	0,873	0,865
QUAD. AXIS SUBTRANSIENT	X'' _q	0,205	0,202	0,202	0,197
LEAKAGE REACTANCE	X _L	0,073	0,071	0,071	0,072
NEGATIVE SEQUENCE	X ₂	0,173	0,169	0,168	0,166
ZERO SEQUENCE	X ₀	0,077	0,076	0,078	0,076

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0,012	0,015 s	0,018 s	0,019 s
T''d SUB-TRANSTIME CONST.	0,003	0,0038	0,0042	0,045 s
T'do O.C. FIELD TIME CONST	0,2	0,4 s	0,38	0,42 s
Ta ARMATURE TIME CONST.	0,004	0,005	0,0055	0,0055
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.095 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6306 - 2RZ

GROUP	JNP 180M	JNP 180M1	JNP 180M2	JNP180MX
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50 Hz kVA/kW -- POWER FACTOR (Cos Q) = 0,8
Continuous 40°C

Series Star (V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	24	19	27	22	31	25	35	28
400/231	24	19	27	22	31	25	35	28
415/240	25	20	28	22	32	26	36	29
1 Phase	16	13	18	14	21	17	23	19

Standby 27°C

Series Star (V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	26	21	30	24	34	27	38	30
400/231	26	21	30	24	34	27	38	30
415/240	28	22	31	25	35	28	40	32
1 Phase	18	14	20	16	23	18	25	20

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	Xd	1,68	1,57	1,57	1,995
DIR. AXIS TRANSIENT	X'd	0,171	0,15	0,15	0,153
DIR. AXIS SUBTRANSIENT	X''d	0,111	0,111	0,111	0,095
QUAD. AXIS REACTANCE	Xq	0,84	0,78	0,78	0,967
QUAD. AXIS SUBTRANSIENT	X''q	0,19	0,17	0,17	0,168
LEAKAGE REACTANCE	XL	0,069	0,063	0,063	0,061
NEGATIVE SEQUENCE	X2	0,161	0,141	0,141	0,129
ZERO SEQUENCE	X0	0,08	0,068	0,068	0,045

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0.02s	0.024s	0.024s	0.024 s
T''d SUB-TRANSTIME CONST.	0.005s	0.065s	0.065s	0.015s
T'do O.C. FIELD TIME CONST	0.4s	0.5 s	0.5 s	0.58s
Ta ARMATURE TIME CONST.	0.006s	0.007	0.007	0.012s
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd	1/Xd

180 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.095 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6306 - 2RZ
	JNP 180L	JNP 180LX	JNP 180LXA

50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	40	32	46	37	50	40
400/231	40	32	46	37	50	40
415/240	42	34	48	38	52	42
1 Phase	27	22	31	25	33	26

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	44	35	51	41	55	44
400/231	44	35	51	41	55	44
415/240	26	37	53	42	57	46
1 Phase	29	23	34	27	36	29

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	Xd	2,038	2,038	2,051
DIR. AXIS TRANSIENT	X'd	0,155	0,155	0,156
DIR. AXIS SUBTRANSIENT	X''d	0,087	0,087	0,085
QUAD. AXIS REACTANCE	Xq	0,99	0,99	0,992
QUAD. AXIS SUBTRANSIENT	X''q	0,075	0,075	0,173
LEAKAGE REACTANCE	XL	0,065	0,065	0,066
NEGATIVE SEQUENCE	X2	0,132	0,132	0,13
ZERO SEQUENCE	X0	0,065	0,065	0,064

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0.025s	0.025s	0.025s
T''d SUB-TRANSTIME CONST.	0.017s	0.017s	0.016s
T'do O.C. FIELD TIME CONST	0,59s	0,59s	0.57s
Tα ARMATURE TIME CONST.	0.011s	0.011s	0.105s
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (Nº 6)	A.V.R. model	Standard SX460
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.216 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6309 - 2RZ

GROUP	JNP 225S1	JNP 225S2	JNP 225M1	JNP 225M2	JNP 225LX
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	55	44	65	52	77	62	91	73	109	87
400/231	55	44	65	52	77	62	91	73	109	87
415/240	57	46	67	54	80	64	94	75	113	90

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	60	48	71	57	85	68	100	80	120	96
400/231	60	48	71	57	85	68	100	80	120	96
415/240	63	50	74	59	88	70	103	82	124	99

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	X _d	2,19	2,1	2,24	2,07	2,2
DIR. AXIS TRANSIENT	X' _d	0,17	0,16	0,17	0,16	0,17
DIR. AXIS SUBTRANSIENT	X'' _d	0,11	0,11	0,12	0,11	0,12
QUAD. AXIS REACTANCE	X _q	1,01	0,97	1,02	0,95	1,01
QUAD. AXIS SUBTRANSIENT	X'' _q	0,14	0,13	0,13	0,14	0,15
LEAKAGE REACTANCE	X _L	0,08	0,06	0,08	0,06	0,06
NEGATIVE SEQUENCE	X ₂	0,13	0,12	0,12	0,13	0,14
ZERO SEQUENCE	X ₀	0,09	0,08	0,01	0,09	0,01

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0.025s	0.027s	0.028 s	0.03s	0.03s
T''d SUB-TRANSTIME CONST.	0.006s	0.006s	0.007s	0.008s	0.008s
T'do O.C. FIELD TIME CONST	0.65s	0.7 s	0.7s	0,75s	0.75s
Ta ARMATURE TIME CONST.	0.005s	0.055s	0.006s	0.0065s	0.007s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d	1/X _d

270 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460/SX440
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.514m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6310 - 2RZ

GROUP	JNP 270S	JNP 270S1	JNP 270S2	JNP 270M	JNP 270M1
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8 Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	123	98	141	113	159	127	182	146	214	171
400/231	123	98	141	113	159	127	182	146	214	171
415/240	125	100	144	115	162	130	186	149	218	174

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	135	108	155	124	175	140	200	160	235	188
400/231	135	108	155	124	175	140	200	160	235	188
415/240	138	110	147	118	178	142	205	164	240	192

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	X _d	2,21	2,06	2,09	2,11	2,01
DIR. AXIS TRANSIENT	X' _d	0,18	0,18	0,185	0,19	0,175
DIR. AXIS SUBTRANSIENT	X'' _d	0,13	0,11	0,12	0,13	0,12
QUAD. AXIS REACTANCE	X _q	1,43	1,32	1,35	1,38	1,23
QUAD. AXIS SUBTRANSIENT	X'' _q	0,16	0,16	0,16	0,16	0,14
LEAKAGE REACTANCE	X _L	0,06	0,06	0,07	0,08	0,08
NEGATIVE SEQUENCE	X ₂	0,14	0,13	0,135	0,14	0,12
ZERO SEQUENCE	X ₀	0,09	0,08	0,085	0,09	0,08

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0.028s	0.031s	0.0315s	0.032s	0.034s
T''d SUB-TRANSTIME CONST.	0.001s	0.01s	0.01s	0.01s	0.011s
T'do O.C. FIELD TIME CONST	0.85s	0.85 s	0.85s	0,85s	0.88s
Tα ARMATURE TIME CONST.	0.007s	0.073s	0.072s	0.007s	0.085s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d	1/X _d

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460/SX440
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.514m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6310 - 2RZ

GROUP	JNP 270MX	JNP 270L1	JNP 270LX	JNP 270LXA
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8

Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	232	186	255	204	273	218	318	254
400/231	232	186	255	204	273	218	318	254
415/240	237	190	260	208	278	222	324	259

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	255	204	280	224	300	240	350	280
400/231	255	204	280	224	300	240	350	280
415/240	261	209	286	229	306	245	356	285

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	X _d	2,01	2,009	1,92	1,915
DIR. AXIS TRANSIENT	X' _d	0,174	0,17	0,17	0,168
DIR. AXIS SUBTRANSIENT	X'' _d	0,12	0,12	0,12	0,118
QUAD. AXIS REACTANCE	X _q	1,21	1,18	1,15	1,14
QUAD. AXIS SUBTRANSIENT	X'' _q	0,145	0,15	0,16	0,155
LEAKAGE REACTANCE	X _L	0,083	0,078	0,07	0,06
NEGATIVE SEQUENCE	X ₂	0,125	0,123	0,12	0,14
ZERO SEQUENCE	X ₀	0,08	0,075	0,07	0,1

OTHER DATA – CLASS H / 400 V

T'_d TRANSIENT TIME CONST.	0.028s	0.031s	0,0315s	0.032s
T''_d SUB-TRANSTIME CONST.	0.001s	0.01s	0.01s	0.01s
T'_{do} O.C. FIELD TIME CONST	0.85s	0.85 s	0.85s	0,85s
T_a ARMATURE TIME CONST.	0.007s	0.073s	0.072s	0.007s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d

315 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX440
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.8m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6314 - 2RZ

GROUP	JNP 315S	JNP 315M	JNP 315MX	JNP 315MXA	JNP 315L
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) = 0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	373	298	409	327	432	346	468	374	514	411
400/231	373	298	409	327	432	346	468	374	514	411
415/240	380	304	417	334	441	353	477	382	524	419

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	410	328	450	360	475	380	515	412	565	452
400/231	410	328	450	360	475	380	515	412	565	452
415/240	418	334	459	367	485	388	525	420	576	461

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	X _d	2,85	2,71	2,45	2,41	2,04
DIR. AXIS TRANSIENT	X' _d	0,18	0,18	0,16	0,154	0,152
DIR. AXIS SUBTRANSIENT	X'' _d	0,13	0,13	0,12	0,115	0,11
QUAD. AXIS REACTANCE	X _q	2,4	2,33	2,15	2,12	2,1
QUAD. AXIS SUBTRANSIENT	X'' _q	0,36	0,32	0,28	0,27	0,25
LEAKAGE REACTANCE	X _L	0,06	0,06	0,05	0,05	0,05
NEGATIVE SEQUENCE	X ₂	0,24	0,22	0,21	0,2	0,2
ZERO SEQUENCE	X ₀	0,09	0,09	0,085	0,08	0,08

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0,08 s	0,08 s	0,08 s	0,08 s	0,08 s
T''d SUB-TRANSTIME CONST.	0,019 s	0,019 s	0,019 s	0,019 s	0,019 s
T'do O.C. FIELD TIME CONST	1,7 s	1,7 s	1,7 s	1,7 s	1,7 s
Ta ARMATURE TIME CONST.	0,018 s	0,018 s	0,018 s	0,018 s	0,018 s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d	1/X _d

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX440/MX321 + PMG
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	1.035m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6314 - 2RZ

GROUP	JNP 355S1	JNP 355M	JNP 355M1	JNP 355MX
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8 Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	555	444	600	480	659	527	700	560
400/231	555	444	600	480	659	527	700	560
415/240	566	453	612	490	672	538	717	574

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	610	488	660	528	725	580	770	616
400/231	610	488	660	528	725	580	770	616
415/240	623	498	673	538	739	591	789	628

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	X _d	2,95	2,72	2,83	2,62
DIR. AXIS TRANSIENT	X' _d	0,16	0,14	0,15	0,14
DIR. AXIS SUBTRANSIENT	X'' _d	0,12	0,1	0,11	0,1
QUAD. AXIS REACTANCE	X _q	2,4	2,24	2,21	2,19
QUAD. AXIS SUBTRANSIENT	X'' _q	0,24	0,25	0,24	0,23
LEAKAGE REACTANCE	X _L	0,06	0,04	0,05	0,04
NEGATIVE SEQUENCE	X ₂	0,17	0,17	0,16	0,15
ZERO SEQUENCE	X ₀	0,1	0,09	0,08	0,07

OTHER DATA – CLASS H / 400 V

T'_d TRANSIENT TIME CONST.	0,08 s	0,08 s	0,08 s	0,08 s
T''_d SUB-TRANSTIME CONST.	0,012 s	0,012 s	0,012 s	0,012 s
T'_{do} O.C. FIELD TIME CONST	2 s	2,2 s	2,5 s	2,5 s
T_a ARMATURE TIME CONST.	0,017 s	0,017 s	0,019 s	0,019 s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d

355 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 50 Hz– Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX440/MX321 + PMG
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	1.035m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6314 - 2RZ

GROUP	JNP 355MXA	JNP 355L	JNP 355LX
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	750	600	773	618	850	680
400/231	750	600	773	618	850	680
415/240	765	612	788	630	867	964

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	825	660	850	680	935	748
400/231	825	660	850	680	935	748
415/240	842	674	867	694	954	763

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	Xd	2,58	2,57	2,55
DIR. AXIS TRANSIENT	X'd	0,14	0,14	0,14
DIR. AXIS SUBTRANSIENT	X''d	0,1	0,1	0,1
QUAD. AXIS REACTANCE	Xq	2,18	2,16	2,19
QUAD. AXIS SUBTRANSIENT	X''q	0,24	0,25	0,23
LEAKAGE REACTANCE	XL	0,04	0,05	0,04
NEGATIVE SEQUENCE	X2	0,15	0,15	0,15
ZERO SEQUENCE	X0	0,065	0,06	0,065

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0,08 s	0,08 s	0,08 s
T''d SUB-TRANSTIME CONST.	0,012 s	0,012 s	0,012 s
T'do O.C. FIELD TIME CONST	2,5 s	2,5 s	2,5 s
Tα ARMATURE TIME CONST.	0,019 s	0,019 s	0,019 s
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard MX341 + PMG
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	1.614m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6317 - 2RZ

GROUP	JNP 400S	JNP 400M	JNP 400MX	JNP 400L
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) =8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	909	727	1000	800	1136	909	1273	1018
400/231	909	727	1000	800	1136	909	1273	1018
415/240	943	754	1038	830	1178	942	1321	1057

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380/220	1000	800	1100	880	1250	1000	1400	1120
400/231	1000	800	1100	880	1250	1000	1400	1120
415/240	1037	830	1141	913	1296	1037	1453	1162

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	X _d	2,83	2,7	2,73	2,51
DIR. AXIS TRANSIENT	X' _d	0,23	0,23	0,22	0,2
DIR. AXIS SUBTRANSIENT	X'' _d	0,16	0,16	0,15	0,14
QUAD. AXIS REACTANCE	X _q	1,7	1,6	0,61	1,47
QUAD. AXIS SUBTRANSIENT	X'' _q	0,19	0,17	0,19	0,21
LEAKAGE REACTANCE	X _L	0,09	0,08	0,08	0,07
NEGATIVE SEQUENCE	X ₂	0,2	1,18	0,19	0,2
ZERO SEQUENCE	X ₀	0,03	0,02	0,02	0,02

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0,185	0,185	0,185	0,185
T''d SUB-TRANSTIME CONST.	0,025	0,025	0,025	0,025
T'do O.C. FIELD TIME CONST	2,35	2,44	3,03	3,4
Ta ARMATURE TIME CONST.	0,04	0,04	0,046	0,049
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d

400 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard MX341 + PMG
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	1.614m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6317 - 2RZ

GROUP	JNP 400L1	JNP 400L2	JNP 400LX
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50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8

Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	1418	1134	1500	1200	1591	1273
400/231	1418	1134	1500	1200	1591	1273
415/240	1471	1171	1556	1245	1650	1320

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	1560	1248	1650	1320	1750	1400
400/231	1560	1248	1650	1320	1750	1400
415/240	1618	1294	1712	1370	1815	1452

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	Xd	2,5	2,49	2,45
DIR. AXIS TRANSIENT	X'd	0,019	0,019	0,018
DIR. AXIS SUBTRANSIENT	X''d	0,0133	0,013	0,012
QUAD. AXIS REACTANCE	Xq	0,13965	0,13	0,12
QUAD. AXIS SUBTRANSIENT	X''q	0,01995	0,02	0,02
LEAKAGE REACTANCE	XL	0,00665	0,007	0,006
NEGATIVE SEQUENCE	X2	0,019	0,019	0,018
ZERO SEQUENCE	X0	0,018	0,018	0,017

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0,185	0,185	0,185
T''d SUB-TRANSTIME CONST.	0,025	0,025	0,025
T'do O.C. FIELD TIME CONST	3,4	3,5	3,5
Tα ARMATURE TIME CONST.	0,05	0,05	0,48
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard MX321 + PMG /ETC3
Wires	6	Voltage regulation	± 0.5 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	2.69 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6319 - 2RZ

GROUP	JNP 450S	JNP 450SX	JNP 450M
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**50 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C**

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	1750	1400	1818	1454	2045	1636
400/231	1750	1400	1818	1454	2045	1636
415/240	1785	1428	1854	1483	2086	1669

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	1925	1540	2000	1600	2250	1800
400/231	1925	1540	2000	1600	2250	1800
415/240	1964	1571	2039	1631	2295	1836

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	Xd	3,26	3,26	2,96
DIR. AXIS TRANSIENT	X'd	0,2	0,2	0,18
DIR. AXIS SUBTRANSIENT	X''d	0,15	0,15	0,13
QUAD. AXIS REACTANCE	Xq	2,1	2,1	1,91
QUAD. AXIS SUBTRANSIENT	X''q	0,29	0,29	0,27
LEAKAGE REACTANCE	XL	0,04	0,04	0,03
NEGATIVE SEQUENCE	X2	0,21	0,21	0,19
ZERO SEQUENCE	X0	0,03	0,03	0,02

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0,135 s	0,134 s	0,135 s
T''d SUB-TRANSTIME CONST.	0,01 s	0,01 s	0,01 s
T'do O.C. FIELD TIME CONST	2,14 s	2,14 s	2,23 s
Tα ARMATURE TIME CONST.	0,02 s	0,02 s	0,02 s
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd

450 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 50 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard MX321 + PMG /ETC3
Wires	6	Voltage regulation	± 0.5 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	2.69 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6319 - 2RZ

GROUP	JNP 450MX	JNP 450L	JNP 450LM
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**50 Hz kVA/kW -- POWER FACTOR(Cos Q) =8
Continuous 40°C**

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	2300	1840	2500	2000	2727	2185
400/231	2300	1840	2500	2000	2727	2185
415/240	2346	1877	2250	2040	2782	2226

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
380/220	2530	2024	2750	2200	3000	2400
400/231	2530	2024	2750	2200	3000	2400
415/240	2581	2065	2805	2244	3060	2448

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 400 V

DIR. AXIS SYNCHRONOUS	X _d	2,88	2,96	2,73
DIR. AXIS TRANSIENT	X' _d	0,18	0,18	0,17
DIR. AXIS SUBTRANSIENT	X'' _d	0,13	0,013	0,12
QUAD. AXIS REACTANCE	X _q	1,85	1,9	1,75
QUAD. AXIS SUBTRANSIENT	X'' _q	0,26	0,27	0,25
LEAKAGE REACTANCE	X _L	0,03	0,03	0,03
NEGATIVE SEQUENCE	X ₂	0,18	0,19	0,17
ZERO SEQUENCE	X ₀	0,02	0,02	0,02

OTHER DATA – CLASS H / 400 V

T'd TRANSIENT TIME CONST.	0,137 s	0,149 s	0,154 s
T''d SUB-TRANSTIME CONST.	0,01 s	0,02 s	0,02 s
T'do O.C. FIELD TIME CONST	2,25 s	2,46 s	2,54 s
Tα ARMATURE TIME CONST.	0,02 s	0,02 s	0,02 s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d

4 POLE 50/60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard ETC3 + PMG
Wires	6	Voltage regulation	± 0.5 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	2.82 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6320 - 2RS-C3

JNP 500SX

50 Hz kVA/kW -- POWER FACTOR(Cos Q) = 0,8

Continuous 40°C		Standby /27 °C		
Series Star(V)	kVA	kW	kVA	kW
380/220	3000	2400	3300	2640
400/231	3000	2400	3300	2640
415/240	3060	2448	3366	2693

60 Hz kVA/kW -- POWER FACTOR(Cos Q) = 0,8

Continuous 40°C		Standby /27 °C		
Series Star(V)	kVA	kW	kVA	kW
416/240	2978	2382	3276	2621
440/254	3135	2508	3449	2759
480/277	3300	2640	3630	2904

REACTANCES(%) – TIME CONSTANTS (ms) : CLASS: H / 400 V			480 V
DIR. AXIS SYNCHRONOUS	Xd	3,52	3,423
DIR. AXIS TRANSIENT	X'd	0,216	0,21
DIR. AXIS SUBTRANSIENT	X''d	0,162	0,1575
QUAD. AXIS REACTANCE	Xq	2,268	2,205
QUAD. AXIS SUBTRANSIENT	X''q	0,313	0,3045
LEAKAGE REACTANCE	XL	0,043	0,042
NEGATIVE SEQUENCE	X2	0,226	0,2205
ZERO SEQUENCE	X0	0,032	0,0315

OTHER DATA – CLASS H / 400 V		OTHER DATA – CLASS H / 480 V
T'd TRANSIENT TIME CONST.	0,135 s	0,135 s
T''d SUB-TRANSTIME CONST.	0,01 s	0,01 s
T'do O.C. FIELD TIME CONST	2,14 s	2,14 s
Tα ARMATURE TIME CONST.	0,02 s	0,02 s
SHORT CIRCUIT RATIO	1/Xd	1/Xd

160 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.09 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6306 - 2RZ

GROUP	JNP 160S	JNP 160M	JNP 160L	JNP160
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**60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C**

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	12	9,6	18	14,4	19	15,2	25	20
440/254	13	10,4	19	15,2	20	16	26	20,8
480/277	13	10,4	19	15,2	20	16	26	20,8
1 Phase	8,6	6,9	12,6	10	13,3	10,6	17,3	13,8

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	13	10,4	20	16	21	16,8	28	22,4
440/254	14	11,2	21	16,8	22	17,6	29	23,2
480/277	14	11,2	21	16,8	22	17,6	29	23,2
1 Phase	9,3	7,4	14	11,2	14,6	11,7	19,3	15,4

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	Xd	2,425	2,365	2,338	2,313
DIR. AXIS TRANSIENT	X'd	0,242	0,24	0,237	0,237
DIR. AXIS SUBTRANSIENT	X''d	0,152	0,149	0,151	0,149
QUAD. AXIS REACTANCE	Xq	1,191	1,171	1,162	1,151
QUAD. AXIS SUBTRANSIENT	X''q	0,275	0,271	0,271	0,264
LEAKAGE REACTANCE	XL	0,098	0,095	0,095	0,096
NEGATIVE SEQUENCE	X2	0,231	0,226	0,224	0,222
ZERO SEQUENCE	X0	0,103	0,101	0,104	0,101

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,012	0,015 s	0,018 s	0,019 s
T''d SUB-TRANSTIME CONST.	0,003	0,0038	0,0042	0,045 s
T'do O.C. FIELD TIME CONST	0,2	0,4 s	0,38	0,42 s
Ta ARMATURE TIME CONST.	0,004	0,005	0,0055	0,0055
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd	1/Xd

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.119 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6306 - 2RZ

GROUP	JNP 180M	JNP 180M1	JNP 180M2	JNP180MX
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60 Hz kVA/kW -- POWER FACTOR (Cos Q) = 0,8
Continuous 40°C

Series Star (V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	28	22	34	27	38	30	42	34
440/254	30	24	36	29	40	32	45	36
480/277	30	24	36	29	40	32	45	36
1 Phase	20	16	24	19	27	22	30	24

Standby 27°C

Series Star (V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	31	25	37	30	42	34	46	37
440/254	33	26	40	32	44	35	50	40
480/277	33	26	40	32	44	35	50	40
1 Phase	22	18	26	21	49	23	33	26

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	Xd	1,764	1,649	1,649	2,095
DIR. AXIS TRANSIENT	X'd	0,18	0,158	0,158	0,161
DIR. AXIS SUBTRANSIENT	X''d	0,117	0,117	0,117	0,1
QUAD. AXIS REACTANCE	Xq	0,882	0,819	0,819	1,015
QUAD. AXIS SUBTRANSIENT	X''q	0,2	0,179	0,179	0,176
LEAKAGE REACTANCE	XL	0,072	0,066	0,066	0,064
NEGATIVE SEQUENCE	X2	0,169	0,148	0,148	0,135
ZERO SEQUENCE	X0	0,084	0,071	0,071	0,73

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,02s	0,024 s	0,024 s	0,024 s
T''d SUB-TRANSTIME CONST.	0,005s	0,0065	0,0065	0,0015s
T'do O.C. FIELD TIME CONST	0,4s	0,5 s	0,5 s	0,58s
Ta ARMATURE TIME CONST.	0,006s	0,007	0,007	0,0012s
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd	1/Xd

180 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.119 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6306 - 2RZ

JNP 180L

JNP 180LX

JNP 180LXA

60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8

Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
416/240	45	36	57	46	58	46
440/254	48	38	61	49	63	50
480/277	48	38	61	49	63	50
1 Phase	32	26	41	33	42	34

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
416/240	50	40	63	50	64	51
440/254	53	42	67	54	69	55
480/277	26	37	53	42	57	46
1 Phase	35	28	45	36	46	37

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	Xd	2,14	2,14	2,154
DIR. AXIS TRANSIENT	X'd	0,163	0,163	0,164
DIR. AXIS SUBTRANSIENT	X''d	0,191	0,191	0,089
QUAD. AXIS REACTANCE	Xq	1,04	1,04	1,042
QUAD. AXIS SUBTRANSIENT	X''q	0,184	0,184	0,182
LEAKAGE REACTANCE	XL	0,067	0,067	0,069
NEGATIVE SEQUENCE	X2	0,139	0,139	0,137
ZERO SEQUENCE	X0	0,068	0,068	0,067

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0.025 s	0.025 s	0.025 s
T''d SUB-TRANSTIME CONST.	0.017 s	0.017 s	0.016 s
T'do O.C. FIELD TIME CONST	0.59 s	0.59 s	0.57 s
Ta ARMATURE TIME CONST.	0.011 s	0.011 s	0.105 s
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (Nº 6)	A.V.R. model	Standard SX460
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min ⁻¹	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.281 m ³ /sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6309 - 2RZ

GROUP	JNP 225S1	JNP 225S2	JNP 225M1	JNP 225M2	JNP 225LX
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	64	51	77	62	83	66	103	82	117	94
440/254	67	54	81	65	87	70	108	86	123	98
480/277	71	57	85	68	92	74	114	91	129	103

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	70	56	85	68	91	73	113	90	129	103
440/254	74	59	89	71	96	77	119	95	135	108
480/277	78	62	93	74	101	81	125	100	142	114

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	X _d	2,3	2,205	2,352	2,174	2,31
DIR. AXIS TRANSIENT	X' _d	0,179	0,168	0,179	0,168	0,179
DIR. AXIS SUBTRANSIENT	X'' _d	0,116	0,116	0,126	0,116	0,126
QUAD. AXIS REACTANCE	X _q	1,061	1,019	1,071	0,998	1,061
QUAD. AXIS SUBTRANSIENT	X'' _q	0,147	0,137	0,137	0,147	0,158
LEAKAGE REACTANCE	X _L	0,084	0,063	0,084	0,063	0,063
NEGATIVE SEQUENCE	X ₂	0,137	0,126	0,126	0,137	0,147
ZERO SEQUENCE	X ₀	0,095	0,084	0,105	0,095	0,105

OTHER DATA – CLASS H / 480 V

T'_d TRANSIENT TIME CONST.	0,025s	0,027 s	0,028 s	0,03 s	0,03s
T''_d SUB-TRANSTIME CONST.	0,006s	0,006s	0,007s	0,008 s	0,008s
T'_{do} O.C. FIELD TIME CONST	0,65s	0,7s	0,7s	0,75 s	0,75s
T_a ARMATURE TIME CONST.	0,005s	0,055s	0,006s	0,0065s	0,007s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d	1/X _d

270 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460/SX440
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.617m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6310 - 2RZ

GROUP	JNP 270S	JNP 270S1	JNP 270S2	JNP 270M	JNP 270M1
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	139	111	164	131	184	147	210	168	249	199
440/254	146	117	172	138	194	155	221	177	262	210
480/277	154	123	181	145	204	163	233	186	275	220

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	153	122	180	144	202	162	231	185	274	219
440/254	161	129	189	151	213	170	243	194	288	230
480/277	169	135	199	159	224	179	256	205	303	242

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	X _d	2,3205	2,163	2,1945	2,2155	2,1105
DIR. AXIS TRANSIENT	X' _d	0,189	0,189	0,19425	0,1995	0,18375
DIR. AXIS SUBTRANSIENT	X'' _d	0,1365	0,1155	0,126	0,1365	0,126
QUAD. AXIS REACTANCE	X _q	1,5015	1,386	1,4175	1,449	1,2915
QUAD. AXIS SUBTRANSIENT	X'' _q	0,168	0,168	0,168	0,168	0,147
LEAKAGE REACTANCE	X _L	0,063	0,063	0,0735	0,084	0,084
NEGATIVE SEQUENCE	X ₂	0,147	0,1365	0,14175	0,147	0,126
ZERO SEQUENCE	X ₀	0,0945	0,084	0,08925	0,0945	0,084

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,028 s	0,031 s	0,0315 s	0,032 s	0,034 s
T''d SUB-TRANSTIME CONST.	0,001 s	0,01 s	0,01 s	0,01 s	0,011 s
T'do O.C. FIELD TIME CONST	0,85 s	0,85 s	0,85 s	0,85 s	0,88 s
Tα ARMATURE TIME CONST.	0,007	0,0073 s	0,0072 s	0,007 s	0,0085 s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d	1/X _d

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX460/SX440
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.617m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6310 - 2RZ

GROUP	JNP 270MX	JNP 270L1	JNP 270LX	JNP 270LXA
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8

Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	269	215	294	235	321	257	358	286
440/254	284	227	309	247	338	270	377	302
480/277	298	238	325	260	356	285	398	318

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	296	237	323	258	353	282	394	315
440/254	312	250	340	272	372	298	415	332
480/277	328	262	358	286	392	314	437	350

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	X _d	2,1105	2,10945	2,016	2,01075
DIR. AXIS TRANSIENT	X' _d	0,1827	0,1785	0,1785	0,1764
DIR. AXIS SUBTRANSIENT	X'' _d	0,126	0,126	0,126	0,1239
QUAD. AXIS REACTANCE	X _q	1,2705	1,239	1,2075	1,197
QUAD. AXIS SUBTRANSIENT	X'' _q	0,15225	0,1575	0,168	0,16275
LEAKAGE REACTANCE	X _L	0,08715	0,0819	0,0735	0,063
NEGATIVE SEQUENCE	X ₂	0,13125	0,12915	0,126	0,147
ZERO SEQUENCE	X ₀	0,084	0,07875	0,0735	0,105

OTHER DATA – CLASS H / 480 V

T'_d TRANSIENT TIME CONST.	0,035 s	0,038 s	0,038 s	0,03 s
T''_d SUB-TRANSTIME CONST.	0,011 s	0,012 s	0,012 s	0,0085
T'_{do} O.C. FIELD TIME CONST	0,9 s	0,95 s	1 s	1 s
T_a ARMATURE TIME CONST.	0,009 s	0,01 s	0,01 s	0,01 s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d

315 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX440
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	0.99m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6314 - 2RZ

GROUP	JNP 315S	JNP 315M	JNP 315MX	JNP 315MXA	JNP 315L
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) = 0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	421	336	476	381	490	392	528	422	580	464
440/254	443	354	501	401	516	413	556	445	611	489
480/277	466	373	527	422	543	434	585	468	643	514

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	463	370	524	419	539	431	581	465	638	510
440/254	487	390	551	441	568	454	612	490	672	538
480/277	513	410	580	464	597	478	644	515	707	566

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	X _d	2,9925	2,8455	2,5725	2,5305	2,52
DIR. AXIS TRANSIENT	X' _d	0,189	0,189	0,168	0,1617	0,1596
DIR. AXIS SUBTRANSIENT	X'' _d	0,1365	0,1365	0,126	0,12075	0,1155
QUAD. AXIS REACTANCE	X _q	2,52	2,4465	2,2575	2,226	2,205
QUAD. AXIS SUBTRANSIENT	X'' _q	0,378	0,336	0,294	0,2835	0,2625
LEAKAGE REACTANCE	X _L	0,063	0,063	0,0525	0,0525	0,0525
NEGATIVE SEQUENCE	X ₂	0,252	0,231	0,2205	0,21	0,21
ZERO SEQUENCE	X ₀	0,0945	0,0945	0,08925	0,084	0,084

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,08 s	0,08 s	0,08 s	0,08 s	0,08 s
T''d SUB-TRANSTIME CONST.	0,019 s	0,019 s	0,019 s	0,019 s	0,019 s
T'do O.C. FIELD TIME CONST	1,7 s	1,7 s	1,7 s	1,7 s	1,7 s
Ta ARMATURE TIME CONST.	0,018 s	0,0018 s	0,018 s	0,018 s	0,018 s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d	1/X _d	1/X _d

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	Standard SX440/MX341 + PMG
Wires	12	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 5 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	1.312m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6314 - 2RZ

GROUP	JNP 355S1	JNP 355M	JNP 355M1	JNP 355MX
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	661	529	697	558	743	594	789	631
440/254	696	557	734	587	782	626	831	665
480/277	733	586	773	618	824	659	875	700

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	727	582	767	614	817	654	868	694
440/254	766	613	807	646	860	688	914	731
480/277	806	645	850	680	906	725	963	770

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	Xd	3,0975	2,856	2,9715	2,751
DIR. AXIS TRANSIENT	X'd	0,168	0,147	0,1575	0,147
DIR. AXIS SUBTRANSIENT	X''d	0,126	0,105	0,1155	0,105
QUAD. AXIS REACTANCE	Xq	2,52	2,352	2,3205	2,2995
QUAD. AXIS SUBTRANSIENT	X''q	0,252	0,2625	0,252	0,2415
LEAKAGE REACTANCE	XL	0,063	0,042	0,0525	0,042
NEGATIVE SEQUENCE	X2	0,1785	0,1785	0,168	0,1575
ZERO SEQUENCE	X0	0,105	0,0945	0,084	0,0735

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,08 s	0,08 s	0,08 s	0,08 s
T''d SUB-TRANSTIME CONST.	0,012 s	0,012 s	0,012 s	0,012 s
T'do O.C. FIELD TIME CONST	2 s	2,2 s	2,5 s	2,5 s
Ta ARMATURE TIME CONST.	0,017 s	0,0017 s	0,019 s	0,019 s
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd	1/Xd

355 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 60 Hz – Three Phase

Typical Data	Insulation Class	H	Control System		Self Excited		
Winding pitch		2/3 - (N° 6)	A.V.R. model		Standard SX440/MX341 + PMG		
Wires		12	Voltage regulation		± 1.0 %		
Drip proof		IP 23	Sustained short-circuit current		300% (3 IN) : 10s		
Altitude		≤ 1000 m	Total harmonic (*) TGH / THC		< 5 %		
Overspeed		2250 min-1	Wave form: NEMA = TIF - (*)		< 50		
Air flow		1.312m³/sec.	Wave form: I.E.C. = THF - (*)		< 2 %		
Bearing drive		-	Bearing non-drive		6314 - 2RZ		
GROUP		JNP 355MXA	JNP 355L		JNP 355LX		
60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8							
Continuous 40°C							
Series Star(V)		kVA	kW	kVA	kW	kVA	kW
416/240		846	677	865	692	945	756
440/254		891	713	911	729	995	796
480/277		938	750	956	767	1047	838
Standby 27°C							
Series Star(V)		kVA	kW	kVA	kW	kVA	kW
416/240		931	745	951	761	1040	832
440/254		980	784	1002	802	1095	876
480/277		1032	826	1055	844	1152	922
REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V							
DIR. AXIS SYNCHRONOUS	Xd	2,709		2,6985		2,6775	
DIR. AXIS TRANSIENT	X'd	0,147		0,147		0,147	
DIR. AXIS SUBTRANSIENT	X''d	0,105		0,105		0,105	
QUAD. AXIS REACTANCE	Xq	2,289		2,268		2,2995	
QUAD. AXIS SUBTRANSIENT	X''q	0,252		0,2625		0,2415	
LEAKAGE REACTANCE	XL	0,042		0,0525		0,042	
NEGATIVE SEQUENCE	X2	0,1575		0,1575		0,1575	
ZERO SEQUENCE	X0	0,06825		0,063		0,06825	
OTHER DATA – CLASS H / 480 V							
T'd TRANSIENT TIME CONST.		0,08 s		0,08 s		0,08 s	
T''d SUB-TRANSTIME CONST.		0,012 s		0,012 s		0,012 s	
T'do O.C. FIELD TIME CONST		2,5 s		2,5 s		2,5 s	
Tα ARMATURE TIME CONST.		0,019 s		0,019 s		0,019 s	
SHORT CIRCUIT RATIO		1/Xd		1/Xd		1/Xd	

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	MX341 + PMG Standard
Wires	6	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	1.96lm³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6317 - 2RZ

GROUP	JNP 400S	JNP 400M	JNP 400MX	JNP 400L
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) =8

Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	1026	821	1129	903	1283	1026	1435	1148
440/254	1080	864	1188	950	1350	1080	1511	1209
480/277	1137	910	1250	1000	1421	1137	1591	1273

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW	kVA	kW
416/240	1129	903	1242	994	1411	1129	1578	1262
440/254	1188	950	1307	1046	1485	1188	1662	1329
480/277	1251	1001	1375	1100	1563	1250	1750	1400

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	Xd	2,9715	2,835	2,8665	2,6355
DIR. AXIS TRANSIENT	X'd	0,2415	0,2415	0,231	0,21
DIR. AXIS SUBTRANSIENT	X''d	0,168	0,168	0,1575	0,147
QUAD. AXIS REACTANCE	Xq	1,785	1,68	0,6405	1,5435
QUAD. AXIS SUBTRANSIENT	X''q	0,1995	0,1785	0,1995	0,2205
LEAKAGE REACTANCE	XL	0,0945	0,084	0,084	0,0735
NEGATIVE SEQUENCE	X2	0,21	1,239	0,1995	0,21
ZERO SEQUENCE	X0	0,0315	0,021	0,021	0,021

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,185	0,185	0,185	0,185
T''d SUB-TRANSTIME CONST.	0,025	0,025	0,025	0,025
T'do O.C. FIELD TIME CONST	2,35	2,44	3,03	3,4
Ta ARMATURE TIME CONST.	0,04	0,04	0,046	0,049
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd	1/Xd

400 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	MX341 + PMG Standard
Wires	6	Voltage regulation	± 1.0 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	1.961m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6317 - 2RZ

GROUP	JNP 400L1	JNP 400L2	JNP 400LX
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
416/240	1574	1259	1639	1311	1739	1391
440/254	1657	1326	1725	1380	1830	1464
480/277	1744	1395	1816	1453	1926	1541

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
416/240	1731	1385	1803	1442	1913	1530
440/254	1822	1458	1898	1518	2013	1610
480/277	1918	1534	1998	1598	2119	1695

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	Xd	2,625	2,6145	2,5725
DIR. AXIS TRANSIENT	X'd	0,01995	0,01995	0,0189
DIR. AXIS SUBTRANSIENT	X''d	0,013965	0,01365	0,0126
QUAD. AXIS REACTANCE	Xq	0,1466325	0,1365	0,126
QUAD. AXIS SUBTRANSIENT	X''q	0,0209475	0,021	0,021
LEAKAGE REACTANCE	xL	0,0069825	0,00735	0,0063
NEGATIVE SEQUENCE	X2	0,01995	0,01995	0,0189
ZERO SEQUENCE	X0	0,0189	0,0189	0,01785

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,185	0,185	0,185
T''d SUB-TRANSTIME CONST.	0,025	0,25	0,025
T'do O.C. FIELD TIME CONST	3,4	3,5	3,5
Ta ARMATURE TIME CONST.	0,05	0,05	0,048
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	MX321 + PMG /ETC3
Wires	6	Voltage regulation	± 0.5 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	3.45 m ³ /sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6319 - 2RZ

GROUP	JNP 450S	JNP 450SX	JNP 450M
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) =0,8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
416/240	1958	1566	2033	1626	2288	1830
440/254	2061	1649	2140	1712	2408	1926
480/277	2169	1734	2253	1802	2535	2028

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
416/240	2154	1723	2236	1789	2517	2014
440/254	2267	1814	2354	1883	2649	2119
480/277	2386	1909	2478	1982	2789	2231

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	X _d	3,423	3,423	3,108
DIR. AXIS TRANSIENT	X' _d	0,21	0,21	0,189
DIR. AXIS SUBTRANSIENT	X'' _d	0,1575	0,1575	0,1365
QUAD. AXIS REACTANCE	X _q	2,205	2,205	2,0055
QUAD. AXIS SUBTRANSIENT	X'' _q	0,3045	0,3045	0,2835
LEAKAGE REACTANCE	X _L	0,042	0,042	0,0315
NEGATIVE SEQUENCE	X ₂	0,2205	0,2205	0,1995
ZERO SEQUENCE	X ₀	0,0315	0,0315	0,021

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,135 s	0,134 s	0,135 s
T''d SUB-TRANSTIME CONST.	0,01 s	0,01 s	0,01 s
T'do O.C. FIELD TIME CONST	2,14 s	2,14 s	2,23 s
Ta ARMATURE TIME CONST.	0,02 s	0,02 s	0,02 s
SHORT CIRCUIT RATIO	1/X _d	1/X _d	1/X _d

450 SERIES – SYNCHRONOUS ALTERNATORS

4 POLE 60 Hz – Three Phase

Typical Data Insulation Class	H	Control System	Self Excited
Winding pitch	2/3 - (N° 6)	A.V.R. model	MX321 + PMG /ETC3
Wires	6	Voltage regulation	± 0.5 %
Drip proof	IP 23	Sustained short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic (*) TGH / THC	< 4 %
Overspeed	2250 min-1	Wave form: NEMA = TIF - (*)	< 50
Air flow	3.45 m³/sec.	Wave form: I.E.C. = THF - (*)	< 2 %
Bearing drive	-	Bearing non-drive	6319 - 2RZ

GROUP	JNP 450MX	JNP 450L	JNP 450LM
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60 Hz kVA/kW -- POWER FACTOR(Cos Q) =8
Continuous 40°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
416/240	2461	1969	2708	2166	2953	2362
440/254	2591	2073	2850	2280	3108	2486
480/277	2727	2182	3000	2400	3272	2618

Standby 27°C

Series Star(V)	kVA	kW	kVA	kW	kVA	kW
416/240	2707	2166	2978	2382	3248	2598
440/254	2850	2280	3135	2508	3419	3600
480/277	2362	2486	2618	2598	2735	2880

REACTANCES (%) – TIME CONSTANTS (ms) : CLASS: H / 480 V

DIR. AXIS SYNCHRONOUS	Xd	3,024	3,108	2,8665
DIR. AXIS TRANSIENT	X'd	0,189	0,189	0,1785
DIR. AXIS SUBTRANSIENT	X''d	0,1365	0,1365	0,126
QUAD. AXIS REACTANCE	Xq	1,9425	1,995	1,8375
QUAD. AXIS SUBTRANSIENT	X''q	0,273	0,2835	0,2625
LEAKAGE REACTANCE	XL	0,0315	0,0315	0,0315
NEGATIVE SEQUENCE	X2	0,189	0,1995	0,1785
ZERO SEQUENCE	X0	0,021	0,021	0,021

OTHER DATA – CLASS H / 480 V

T'd TRANSIENT TIME CONST.	0,137 s	0,149 s	0,154 s
T''d SUB-TRANSTIME CONST.	0,01 s	0,02 s	0,02 s
T'do O.C. FIELD TIME CONST	2,25 s	2,46 s	2,54 s
Ta ARMATURE TIME CONST.	0,02 s	0,02 s	0,02 s
SHORT CIRCUIT RATIO	1/Xd	1/Xd	1/Xd



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