L300P Inverter Specifications

Tables for 200V class inverters

Note that "General Specifications" on page 1–9 covers all L300P inverters, followed by footnotes for all specifications tables. Seven 200V models in the tables below (2 to 20 hp) have internal dynamic braking units (see "Dynamic Braking" on page 5–6).

Item		200V Class Specifications				
L300P inverters, 200V models, UL ver.		015LFU2	022LFU2	037LFU2	055LFU2	075LFU2
Applicable motor size, 4-pole *2	**HP**	**2**	**3**	**5**	**7.5**	**10**
	kW	1.5	2.2	3.7	5.5	7.5
Rated capacity (200/240V) kVA		2.5 / 3.1	3.6 / 4.3	5.7 / 6.8	8.3 / 9.9	11 / 13.3
Rated input voltage		3-phase: 200 to 240V ±10%, 50/60 Hz ±5%				
Rated input current (A)		8.3	12	18	26	35
Rated output voltage *3		3-phase (3-wire) 200 to 240V (corresponding to input voltage)				
Rated output current (A)		7.5	10.5	16.5	24	32
Efficiency at 100% rated output, %		92.3	93.2	94.0	94.4	94.6
Watt loss, approximate (W)	at 70% output	102	127	179	242	312
	at 100% output	125	160	235	325	425
Dynamic braking approx. % torque, short time stop *7	without ext. res.	50%	20%			
	with external res.	200%	160%	100%	80%	
DC braking		Variable operating frequency, time, and braking force				
Weight	kg / lb	3.5 / 7.7	3.5 / 7.7	3.5 / 7.7	3.5 / 7.7	5 / 11

Item		200V Class Specifications				
L300P inverters, 200V models, UL ver.		110LFU2	150LFU2	185LFU2	220LFU2	300LFU2
Applicable motor size, 4-pole *2	**HP**	**15**	**20**	**25**	**30**	**40**
	kW	11	15	18.5	22	30
Rated capacity (200/240V) kVA		15.2 / 18.2	20.0 / 24.1	25.2 / 30.3	29.4 / 35.3	39.1 / 46.9
Rated input voltage		3-phase: 200 to 240V ±10%, 50/60 Hz ±5%				
Rated input current (A)		48	64	80	94	124
Rated output voltage *3		3-phase (3-wire) 200 to 240V (corresponding to input voltage)				
Rated output current (A)		44	58	73	85	113
Efficiency at 100% rated output, %		94.8	94.9	95	95	95
Watt loss, approximate (W)	at 70% output	435	575	698	820	1100
	at 100% output	600	800	975	1150	1550
Dynamic braking approx. % torque, short time stop *7	without ext. res.	10%	10%	10%	10%	10%
	with external res.	55%	50%	—		
	with external res. and braking unit	—		25–170%	25–150%	55–110%
DC braking		Variable operating frequency, time, and braking force				
Weight	kg / lb	5 / 11	5 / 11	12 / 26.4	12 / 26.4	12 / 26.4

Item		200V Class Specifications, continued			
L300P inverters, 200V models, UL ver.		370LFU2	450LFU2	550LFU2	750LFU2
Applicable motor size *2	**HP**	**50**	**60**	**75**	**100**
	kW	37	45	55	75
Rated capacity (200/240V) kVA		48.4 / 58.1	58.5 / 70.2	72.7 / 87.2	93.5 / 112.2
Rated input voltage		3-phase: 200 to 240V ±10%, 50/60 Hz ±5%			
Rated input current (A)		154	186	231	297
Rated output voltage *3		3-phase (3-wire) 200 to 240V (corresponding to input voltage)			
Rated output current (A)		140	169	210	270
Efficiency at 100% rated output, %		95.1	95.1	95.1	95.1
Watt loss, approximate (W)	at 70% output	1345	1625	1975	2675
	at 100% output	1900	2300	2800	3800
Dynamic braking approx. % torque, short time stop *7	without external braking unit	10%	10%	10%	10%
	with external res. and braking unit	45–90%	35–75%	30–60%	30–60%
DC braking		Variable operating frequency, time, and braking force			
Weight	kg / lb	20 / 44	30 / 66	30 / 66	50 / 110

Tables for 400V class inverters

Note that "General Specifications" on page 1–9 covers all L300P inverters, followed by footnotes for all specifications tables. Seven 400V models in the tables below (2 to 20 hp) have internal dynamic braking units (see "Dynamic Braking" on page 5–6).

Item		400V Class Specifications				
L300P inverters, 400V models	UL version	015HFU2	022HFU2	040HFU2	055HFU2	075HFU2
	CE version	015HFE2	022HFE2	040HFE2	055HFE2	075HFE2
Applicable motor size *2	**HP**	**2**	**3**	**5**	**7.5**	**10**
	kW	1.5	2.2	4.0	5.5	7.5
Rated capacity (400 / 480V) kVA		2.6 / 3.1	3.6 / 4.4	5.9 / 7.1	8.3 / 9.9	11 / 13.3
Rated input voltage		3-phase (3-wire) 380 to 480V ±10%, 50/60 Hz ±5%				
Rated input current (A)		4.2	5.8	9.5	13	18
Rated output voltage *3		3-phase (3-wire): 380 to 480V (corresponding to input voltage)				
Rated output current (A)		3.8	5.3	8.6	12	16
Efficiency at 100% rated output, %		92.3	93.2	94.0	94.4	94.6
Watt loss, approximate (W)	at 70% output	102	127	179	242	312
	at 100% output	125	160	235	325	425
Dynamic braking approx. % torque, short time stop *7	without ext. res.	50%	20%			
	with external res.	200%		140%	100%	
DC braking		Variable operating frequency, time, and braking force				
Weight	kg / lb	3.5 / 7.7	3.5 / 7.7	3.5 / 7.7	3.5 / 7.7	55 / 121

Item			400V Class Specifications					
L300P inverters, 400V models	UL version		110HFU2	150HFU2	185HFU2	220HFU2	300HFU2	370HFU2
	CE version		110HFE2	150HFE2	185HFE2	220HFE2	300HFE2	370HFE2
Applicable motor size *2		**HP**	**15**	**20**	**25**	**30**	**40**	**50**
		kW	11	15	18.5	22	30	37
Rated capacity (400 / 480V) kVA			15.2 / 18.2	20.0 / 24.1	25.6 / 30.7	29.7 / 35.7	39.4 / 47.3	48.4 / 58.1
Rated input voltage			3-phase (3-wire) 380 to 480V ±10%, 50/60 Hz ±5%					
Rated input current (A)			24	32	41	47	63	77
Rated output voltage *3			3-phase (3-wire): 380 to 480V (corresponding to input voltage)					
Rated output current (A)			22	29	37	43	57	70
Efficiency at 100% rated output, %			94.8	94.9	95	95	95	95.1
Watt loss, approximate (W)	at 70% output		435	575	698	820	1100	1345
	at 100% output		600	800	975	1150	1550	1900
Dynamic braking approx. % torque, short time stop *7	without ext. res.		10%	10%	10%	10%	10%	10%
	with external res.		55%	50%	—			
	with external res. and braking unit		—		40–200%	35–200%	110–170%	90–150%
DC braking			Variable operating frequency, time, and braking force					
Weight	kg / lb		5 / 11	5 / 11	12 / 26.4	12 / 26.4	12 / 26.4	20 / 44

Item			400V Class Specifications					
L300P inverters, 400V models	UL version		450HFU2	550HFU2	750HFU2	900HFU2	1100HFU2	1320HFU2
	CE version		450HFE2	550HFE2	750HFE2	900HFE2	1100HFE2	1320HFE2
Applicable motor size *2		**HP**	**60**	**75**	**100**	**125**	**150**	**175**
		kW	45	55	75	90	110	132
Rated capacity (400 / 480V) kVA			58.8 / 70.1	72.7 / 87.2	93.5 / 112	111 / 133	135 / 162	159 / 191
Rated input voltage			3-phase (3-wire) 380 to 480V ±10%, 50/60 Hz ±5%					
Rated input current (A)			94	116	149	176	215	253
Rated output voltage *3			3-phase (3-wire): 380 to 480V (corresponding to input voltage)					
Rated output current (A)			85	105	135	160	195	230
Efficiency at 100% rated output, %			95.1	95.1	95.1	95.2	95.2	95.2
Watt loss, approximate (W)	at 70% output		1625	1975	2675	3375	3900	4670
	at 100% output		2300	2800	3800	4800	5550	6650
Dynamic braking approx. % torque, short time stop *7	without external braking unit		10%	10%	10%	10%	10%	10%
	with external res. and braking unit		70–120%	60–100%	45–70%	40–60%	30–50%	25–40%
DC braking			Variable operating frequency, time, and braking force					
Weight	kg / lb		30 / 66	30 / 66	30 / 66	60 / 132	60 / 132	80 / 176

General Specifications

The following table (continued on next page) applies to all L300P inverter models.

Item			General Specifications
Protective enclosure *1 *11			Models L300P–110xxx to 750xxx: IP20 (NEMA 1) Models L300P–900xx to 1320xxx: IP00
Control method			Line-to-line sine wave pulse-width modulation (PWM) control
Output frequency range *4			0.1 to 400 Hz
Frequency accuracy			Digital command: ± 0.01% of the maximum frequency Analog command: ± 0.2% (25°C ± 10°C)
Frequency setting resolution			Digital: ± 0.01 Hz; Analog: (max. frequency)/4000, [O] terminal: 12-bit, 0 to 10V; [OI] terminal: 12-bit, 4-20mA; 12 bit [O2] terminal: 12 bit –10 to +10V
Volt./Freq. characteristic			V/F optionally variable (30 to 400Hz base frequency), V/F control (constant torque, reduced torque)
Overload capacity (output current)			120% for 60 seconds, 150% for 0.5 seconds
Acceleration/deceleration time			0.01 to 3600 sec., (linear curve profiles, accel./decel. selection), two-stage accel./decel.
Input signal	Freq. setting	Operator keypad	Up and Down keys / Value settings
		Potentiometer	Analog setting via potentiometer on operator keypad
		External signal *8	0 to 10 VDC (input impedance 10k Ohms), 4 to 20 mA (input impedance 100 Ohms), Potentiometer (1k to 2k Ohms, 2W)
		Serial port	RS485 interface
	FW/RV Run	Operator panel	Run key / Stop key (change FW/RV by function command)
		External signal	FW Run/Stop (NO contact), RV set by terminal assignment (NC/NO), 3-wire input available
	Intelligent Input terminals (assign eight functions to terminals)		RV (reverse run/stop), CF1~CF4 (multi-speed select), JG (jogging), DB (external DC braking), SET (set 2nd motor data), 2CH (2-stage accel./decel.), FRS (free-run stop), EXT (external trip), USP (unattended start protection), CS (commercial power source), SFT (software lock), AT (analog input voltage/current select), RS (reset inverter), STA (start, 3-wire interface), STP (stop, 3-wire interface), F/R (FW/RV 3-wire interface), PID (PID ON/OFF), PIDC (PID reset), CAS (control gain setting), UP (remote control Up function, motorized speed pot.), DWN (remote control Down function, motorized speed pot.), UDC (remote control data clearing), OPE (Operator control), SF1-SF7 (Multispeed bits 0-7), OLR (Overload limit change)
	Thermistor input		One terminal (PTC characteristics)
Output signal	Intelligent Output terminals (assign three functions to two relay N.O. (1 Form A) outputs and one relay N.O.-N.C. (1 Form C) contact		RUN (run signal), FA1 (Frequency arrival type 1 – constant speed), FA2 (Frequency arrival type 2 – over-frequency), OL (overload advance notice signal 1), OD (Output deviation for PID control), AL (alarm signal), FA3 (Frequency arrival type 3 – at-frequency), IP (Instantaneous power failure signal), UV (Under-voltage signal), RNT (Run time over), ONT (Power-ON time over), THM (thermal alarm)
	Intelligent monitor output terminals		Analog voltage monitor, analog current monitor (8-bit resolution), and PWM output, on terminals [AM], [AMI], and [FM]
Display monitor			Output frequency, output current, motor torque, scaled value of output frequency, trip history, I/O terminal condition, input power, output voltage
Other user-settable parameters			V/F free-setting (up to 7 points), frequency upper/lower limit, frequency jump, accel/decel curve selection, manual torque boost value and frequency adjustment, analog meter tuning, start frequency, carrier frequency, electronic thermal protection level, external frequency output zero/span reference, external frequency input bias start/end, analog input selection, retry after trip, restart after instantaneous power failure, overload restriction, default value setting (US, Europe, Japan)
Carrier frequency range			Models L300P–015xxx to 750xxx: 0.5 to 12 kHz Models L300P–900Hxx to 1320Hxx: 0.5 to 8 kHz

Item		General Specifications
Protective functions		Over-current, overload, braking resistor overload, over-voltage, EEPROM error, under-voltage error, CT (current transformer) error, CPU error, external trip, USP error, ground fault, input over-voltage, instantaneous power failure, inverter thermal trip, phase failure detection, IGBT error, thermistor error, expansion card 1 error, expansion card 2 error, under-voltage waiting error
Environment	Temperature *10	Operating (ambient): -10 to 40°C / Storage: -20 to 65°C
	Humidity	20 to 90% humidity (non-condensing)
	Vibration *7	Models L300P–110xxx to 300xxx: 5.9 m/s^2 (0.6G), 10 to 55 Hz Models L300P–370xx to 1320xxx: 2.94 m/s^2 (0.3G), 10 to 55 Hz
	Location *8	Altitude 1,000 m or less, indoors (no corrosive gasses or dust)
Coating color		Models L300P–110xxx to 750xxx: Blue (D.I C14 version No. 436) Models L300P–900xx to 1320xxx: Gray (MUNSELL 8.5YR6.2/0.2)
Accessories	Digital input PCB	SJ-DG (4-digit BCD / 16-bit binary)
	Others	EMI filters, input/output reactors, DC reactors, radio noise filters, braking resistors, braking units, LCR filter, communication cables, factory I/O network interface cards
Operator input devices *9		OPE–SRE (4-digit LED with potentiometer) / OPE–S (4-digit LED w/o potentiometer), Optional: OPE-SR (4-digit LED with potentiometer, Japanese/English overlay), SRW–0EX Multilingual operator with copy function (English, French, German, Italian, Spanish, and Portuguese)

Footnotes for the preceding tables:

Note 1: The protection method conforms to JEM 1030.

Note 2: The applicable motor refers to Hitachi standard 3-phase motor (4-pole). When using other motors, care must be taken to prevent the rated motor current (50/60 Hz) from exceeding the rated output current of the inverter.

Note 3: The output voltage decreases as the main supply voltage decreases (except when using the AVR function). In any case, the output voltage cannot exceed the input power supply voltage.

Note 4: To operate the motor beyond 50/60 Hz, consult the motor manufacturer for the maximum allowable rotation speed.

Note 5: The braking resistor is not installed in the inverter. When your application requires a high regenerative torque, use the optional regenerative braking unit and resistor (see Chapter 5).

Note 6: The storage temperature refers to the short-term temperature during transport.

Note 7: Conforms to the test method specified in JIS C0911 (1984). For the model types excluded in the standard specifications, contact your Hitachi sales representative.

Note 8: When using the inverter in a dust-prone area, we recommend the optional varnish coating specification for the inverter.

Note 9: When using a remote operator keypad and cable, be sure to remove the RJ45 modular interconnect from the inverter's keypad port before connecting the cable.

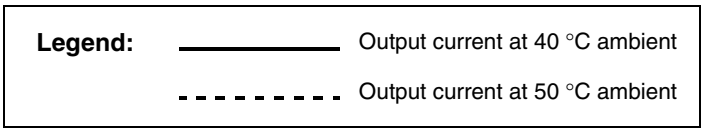
Note 10: When using the inverter from 40° to 50°C ambient, the output current of the inverter must be derated (see the next section on derating curves).

Note 11: NEMA 1 applies to inverter models up to 30kW (–300xxx). An optional wire-entry conduit box is required for inverter models 37kW to 75kW (–370 to –750xxx) to meet the NEMA 1 rating.

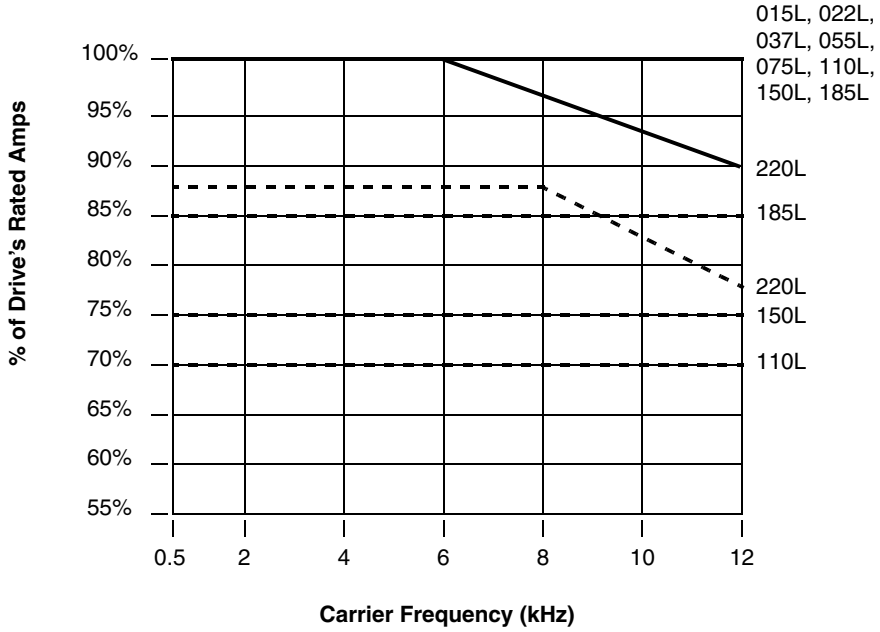
Derating Curves

The maximum available inverter current output is limited by the carrier frequency and ambient temperature. The carrier frequency is the inverter's internal power switching frequency, settable from 0.5 kHz to 12 kHz, or 0.5 kHz to 8 kHz for higher horsepower models. Choosing a higher carrier frequency tends to decrease audible noise, but it also increases the internal heating of the inverter, thus decreasing (derating) the maximum current output capability. Ambient temperature is the temperature just outside the inverter housing—such as inside the control cabinet where the inverter is mounted. A higher ambient temperature decreases (derates) the inverter's maximum current output capacity.

Use the following derating curves to help determine the optimal carrier frequency setting for your inverter, and to find the output current derating. Be sure to use the proper curve for your particular L300P inverter model number.

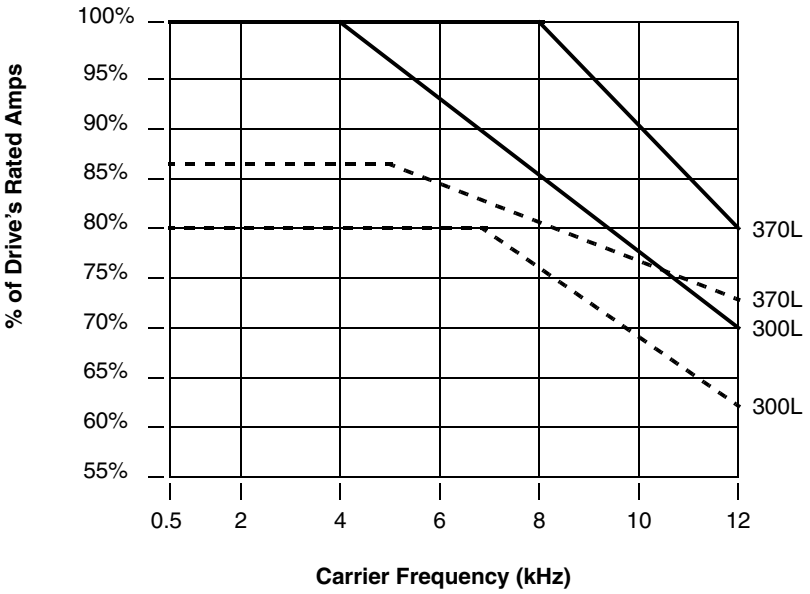


L300P 1.5 to 22 kW 200V class

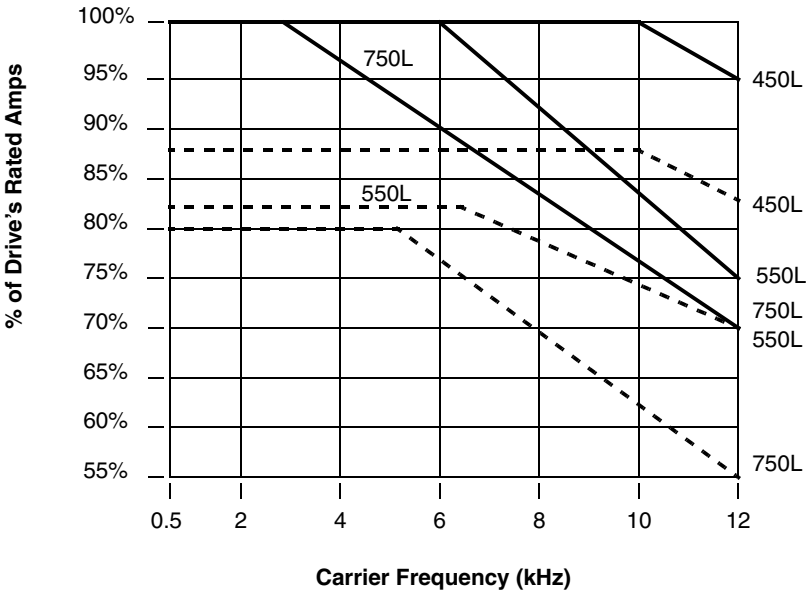


Derating curves, continued...

L300P 30 to 37 kW 200V class

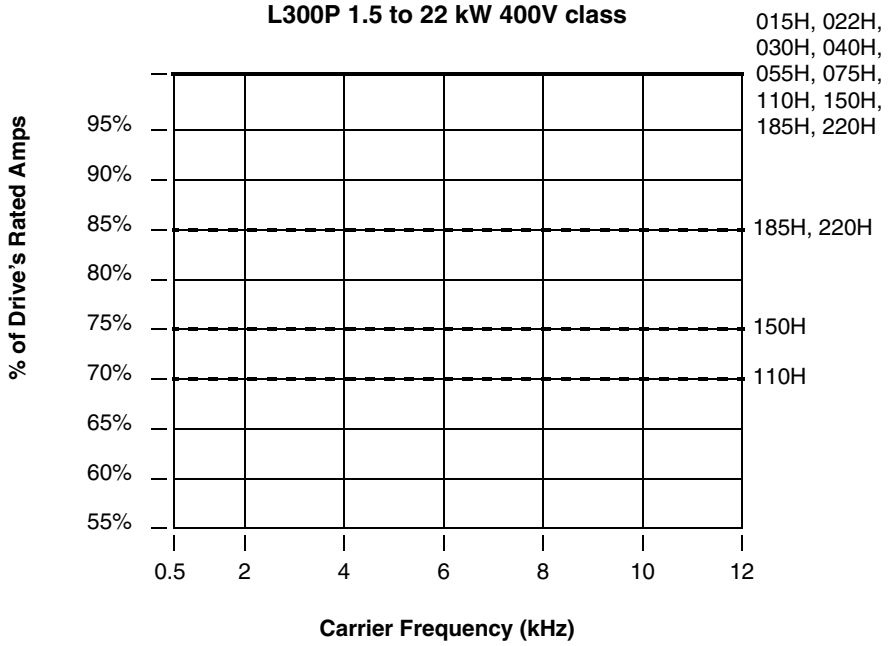


L300P 45 to 75 kW 200V class

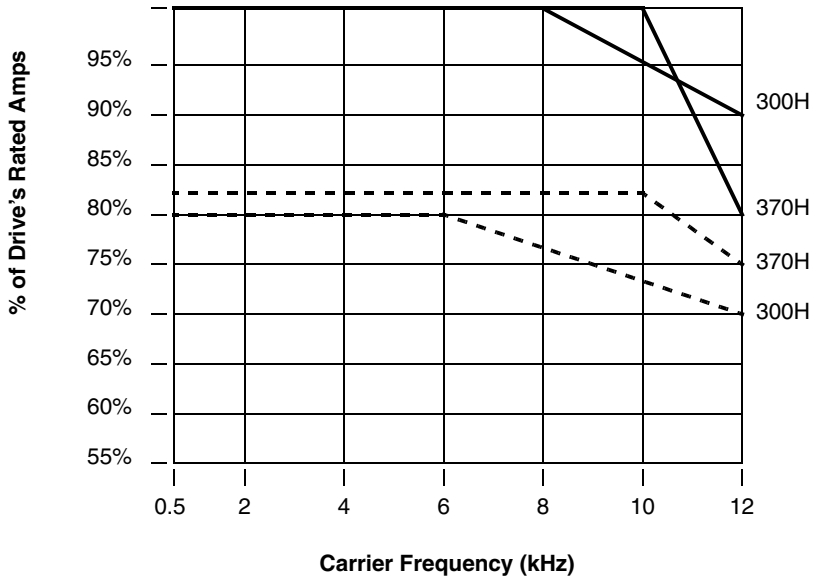


Derating curves, continued...

L300P 1.5 to 22 kW 400V class

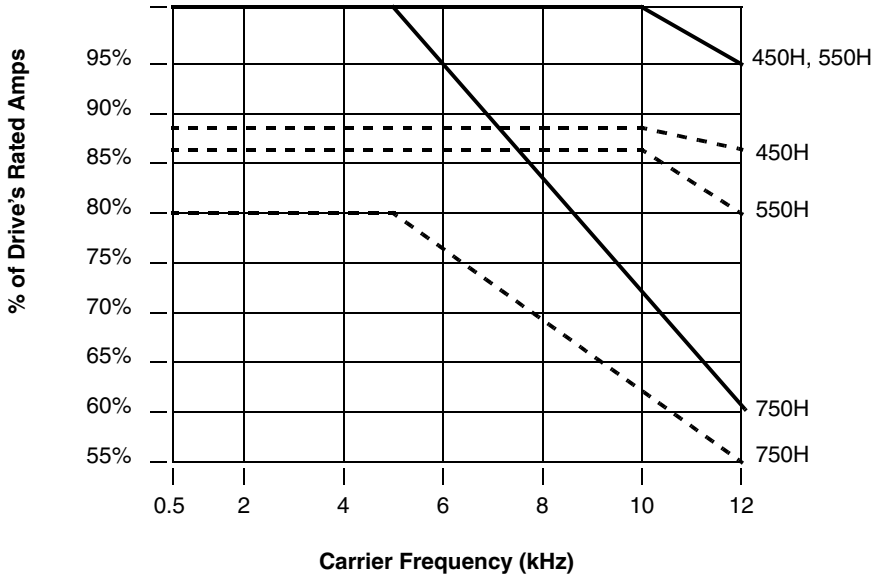


L300P 30 to 37 kW 400V class



Derating curves, continued...

L300P 45 to 75 kW 400V class



L300P 90 to 132 kW 400V class