

PERFORMANCE DATA

GENERAL

The information contained in this section is intended for training only, the current Model 212 IFR Configuration Flight Manual, Section 5, should be consulted for the most up-to-date performance data applicable to the Model 212.

TAKE-OFF PERFORMANCE

Twin engine Take-Off Climbout Safety Speed (VTOCSS), is that speed which will allow take-off distance over a 50 foot obstacle to be realized, will comply with the H-V restrictions, and will allow a safe landing in the event of a single engine failure.

TAKE-OFF PERFORMANCE

Twin Engine Take-Off Climb Out Safety Speed – kts IAS

Gross Weight – lb.

<u>Density ALT</u>	<u>7000</u>	<u>8000</u>	<u>9000</u>	<u>10000</u>	<u>10500</u>	<u>11000</u>	<u>11200</u>
0	30	30	30	35	36	40	41
1000	30	30	30	35	36	40	41
2000	30	30	30	35	36	40	42
3000	30	30	30	36	38	40	42
4000	30	30	30	36	38	42	43
5000	30	30	30	38	40	42	-
6000	30	30	30	38	40	-	-
7000	30	30	30	40	42	-	-
8000	30	30	30	40	-	-	-
9000	30	30	31	40	-	-	-
10000	30	30	32	42	-	-	-

Twin engine Take-off Climbout Safety Speed (VTOCSS), is that speed which will allow take-off distance over a 50 foot obstacle to be realized, will comply with the H-V restrictions, and will allow a safe landing in case of an engine failure.

STANDARD OPERATING PROCEDURES
PART IV - SPECIFIC TYPE: H212
APPENDIX II

TARGET TORQUE

A.	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
	49.5	48.5	48.0	47.0	46.0	45.0	44.0	43.5	42.5	42.0	41.0	40.5	39.5

Figure B-2

TARGET N1 and ITT

A.T.	N1	ITT	O.A.T.	N1	ITT	O.A.T.	N1	ITT
35	98.4	780	+ 11	95.0	708	- 12	91.7	639
34	98.3	777	+ 10	94.8	705	- 13	91.6	636
33	98.1	774	+ 09	94.7	702	- 14	91.4	633
32	98.0	771	+ 08	94.5	699	- 15	91.3	630
31	97.8	768	+ 07	94.4	696	- 16	91.2	627
30	97.7	765	+ 06	94.2	693	- 17	91.0	624
29	97.4	762	+ 05	94.1	690	- 18	90.9	621
28	97.4	759	+ 04	94.0	687	- 19	90.7	618
27	97.3	756	+ 03	93.8	684	- 20	90.6	615
26	97.1	753	+ 02	93.7	681	- 21	90.5	613
25	97.0	750	+ 01	93.5	678	- 22	90.3	611
24	96.9	747	0	93.4	675	- 23	90.2	609
23	96.7	744	- 01	93.3	672	- 24	90.0	607
22	96.6	741	- 02	93.1	669	- 25	89.9	605
21	96.4	738	- 03	93.0	666	- 26	89.8	602
20	96.3	735	- 04	92.8	663	- 27	89.6	599
19	96.2	732	- 05	92.7	660	- 28	89.5	596
18	96.0	729	- 06	92.6	657	- 29	89.3	593
17	95.9	726	- 07	92.4	654	- 30	89.2	590
16	95.7	723	- 08	92.3	651	- 31	89.0	587
15	95.6	720	- 09	92.1	648	- 32	88.9	584
14	95.4	717	- 10	92.0	645	- 33	88.8	581
13	95.3	714	- 11	91.9	642	- 34	88.6	578
12	95.1	711						

STANDARD OPERATING PROCEDURES
PART IV - SPECIFIC TYPE: B212
APPENDIX B

GROUND POWER ASSURANCE CHECK

29.92

CHART												
PRESS ALT	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500
% TORQUE	49.7	48.8	48.0	47.1	46.2	45.3	44.4	43.5	42.7	41.9	41.1	40.3

PRESS ALT	6000	6500	7000	7500	8000	8500	9000	9500	10000	10500	11000
% TORQUE	39.5	38.7	38.0	37.3	36.6	35.8	35.1	34.4	33.8	33.2	32.6

- EXAMPLE
- 1 ALTIMETER 29.92 IN. HG.
 - 2 OBSERVED ALTITUDE 1500 FT.
 - 3 OBSERVED CHART A TORQUE 47.1 %
 - 4 START BOTH ENGINES.
 - 5 ON GROUND, ENGINE NO 2 TO FLIGHT IDLE.
 - 6 STABILIZE NO 1 ENGINE AT 97% N1 AND CHART A TORQUE AND OBSERVE:

N1	95.2%
ITT	710°C
OAT	11.1
 - 7 OBSERVED N1 AND ITT MUST BE LESS THAN CHART B N1 AND ITT FOR OBSERVED OAT.
 - 8 REPEAT CHECK ON NO. 2 ENGINE WITH NO 1. ENGINE IN FLIGHT IDLE.
 - 9 IF OBSERVED N1 AND/OR ITT ARE GREATER THAN CHART B N1 AND ITT FOR OBSERVED OAT, STEPS SHOULD BE TAKEN TO DETERMINE THE CAUSE OF THE POWER LOSS.
 - 10 HOVER IGE AND CHECK NO. 1 AND NO. 2 ENGINE TORQUE NEEDLE SPLIT, NO GREATER THAN 4%.

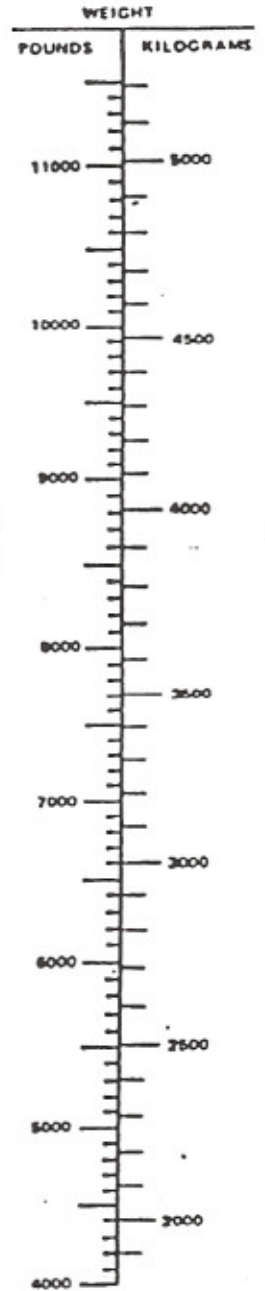
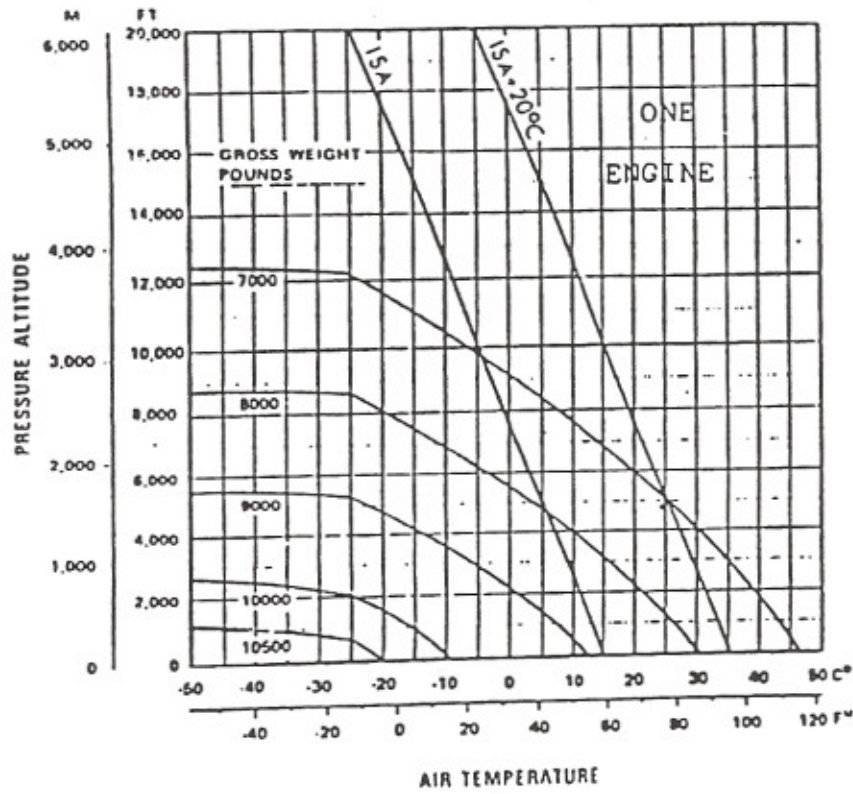
CHART B												
OAT ~ °C	52	50	45	40	35	30	25	20	15	10	5	0
N1 ~ %	100	100	99.8	99.1	98.4	97.7	97.0	96.3	95.6	94.8	94.1	93.4
ITT ~ °C	810	810	805	795	780	765	750	735	720	705	690	675

OAT ~ °C	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50	-54
N1 ~ %	92.7	92.0	91.3	90.6	89.9	89.2	88.5	87.8	87.1	86.4	85.8
ITT ~ °C	660	645	630	615	605	590	575	560	545	530	515

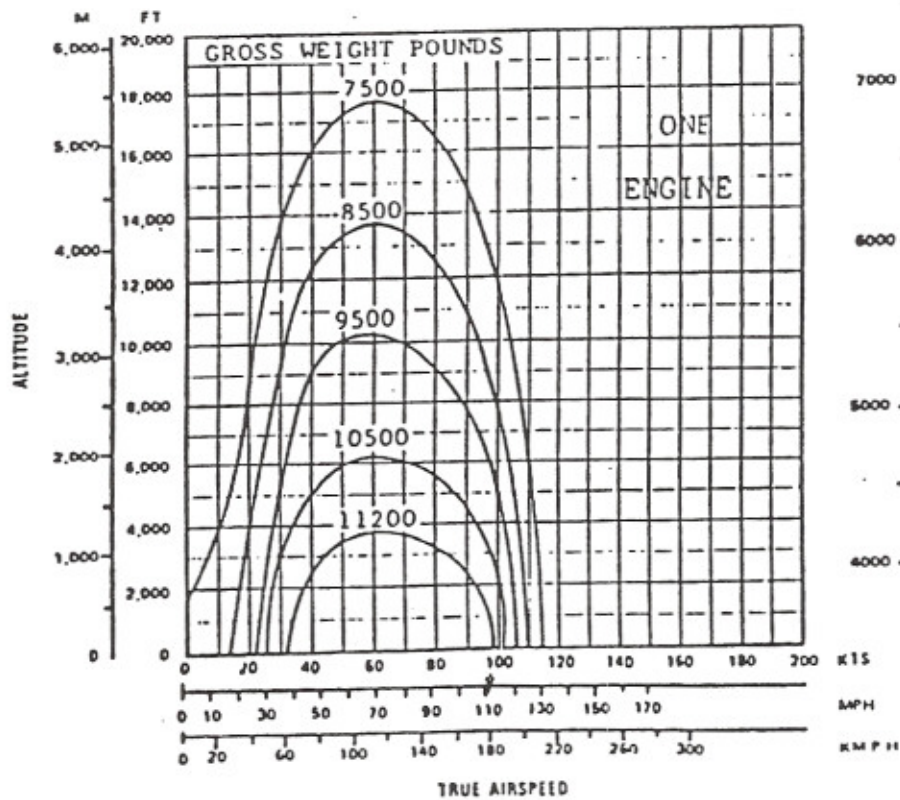


BELL HELICOPTER COMPANY

HOVERING CEILING IGE



AIRSPED VS. ALTITUDE



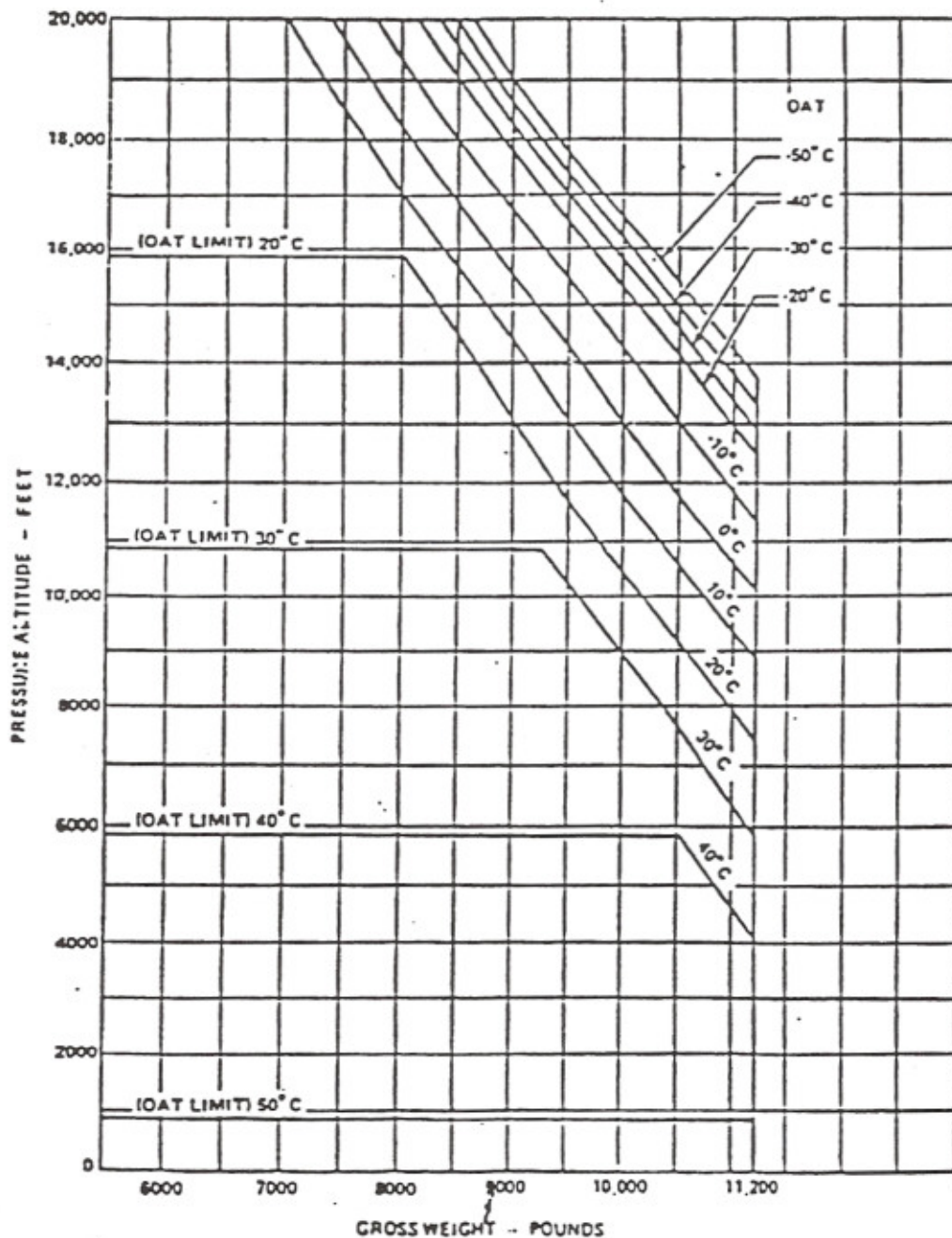
EXTERNAL CARGO

HOVER CEILING

IN GROUND EFFECT

TAKEOFF POWER
ENGINE RPM 100%
GENERATOR 150 AMPS EACH

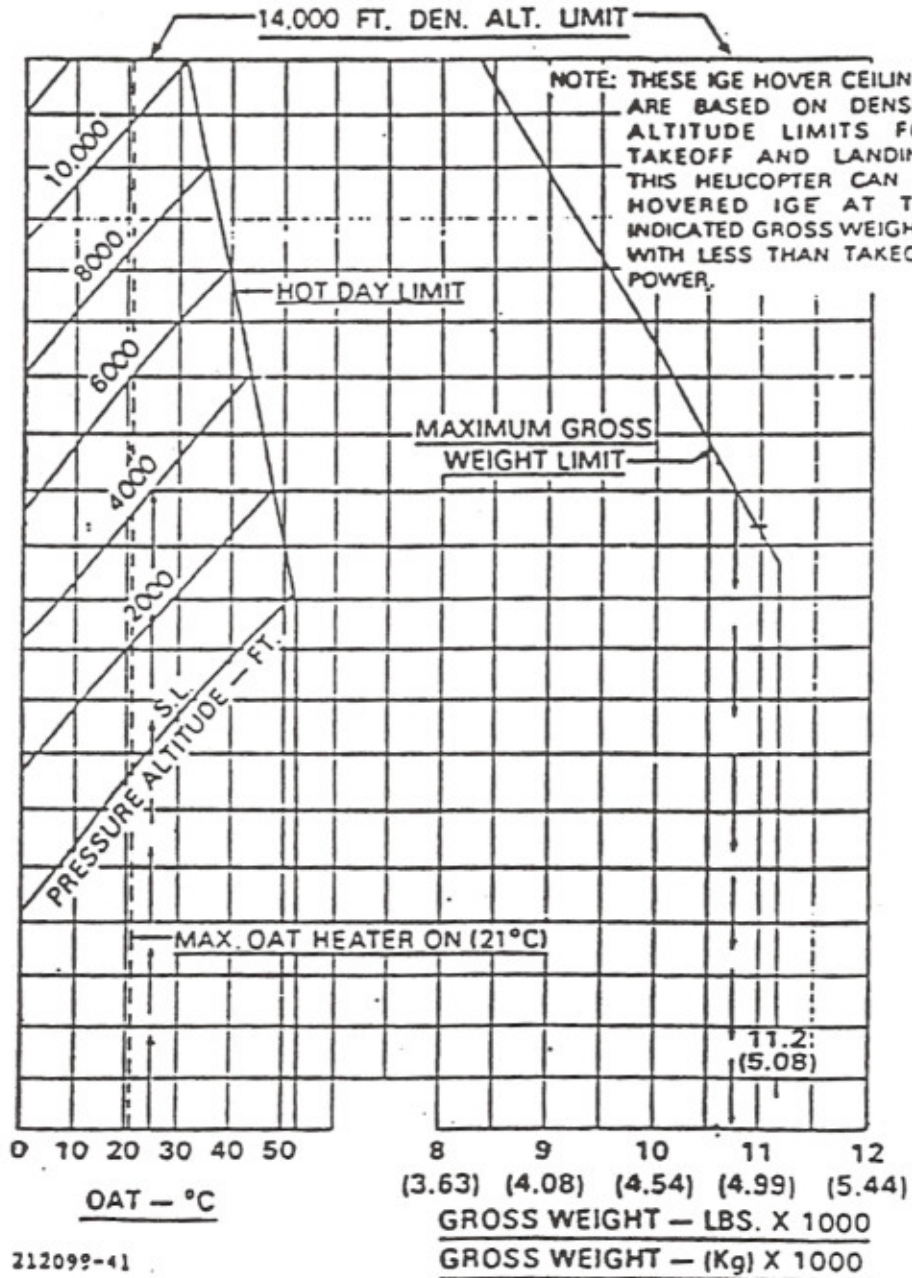
SKID HEIGHT 4 FEET
HEATER OFF



HOVER CEILING IN GROUND EFFECT

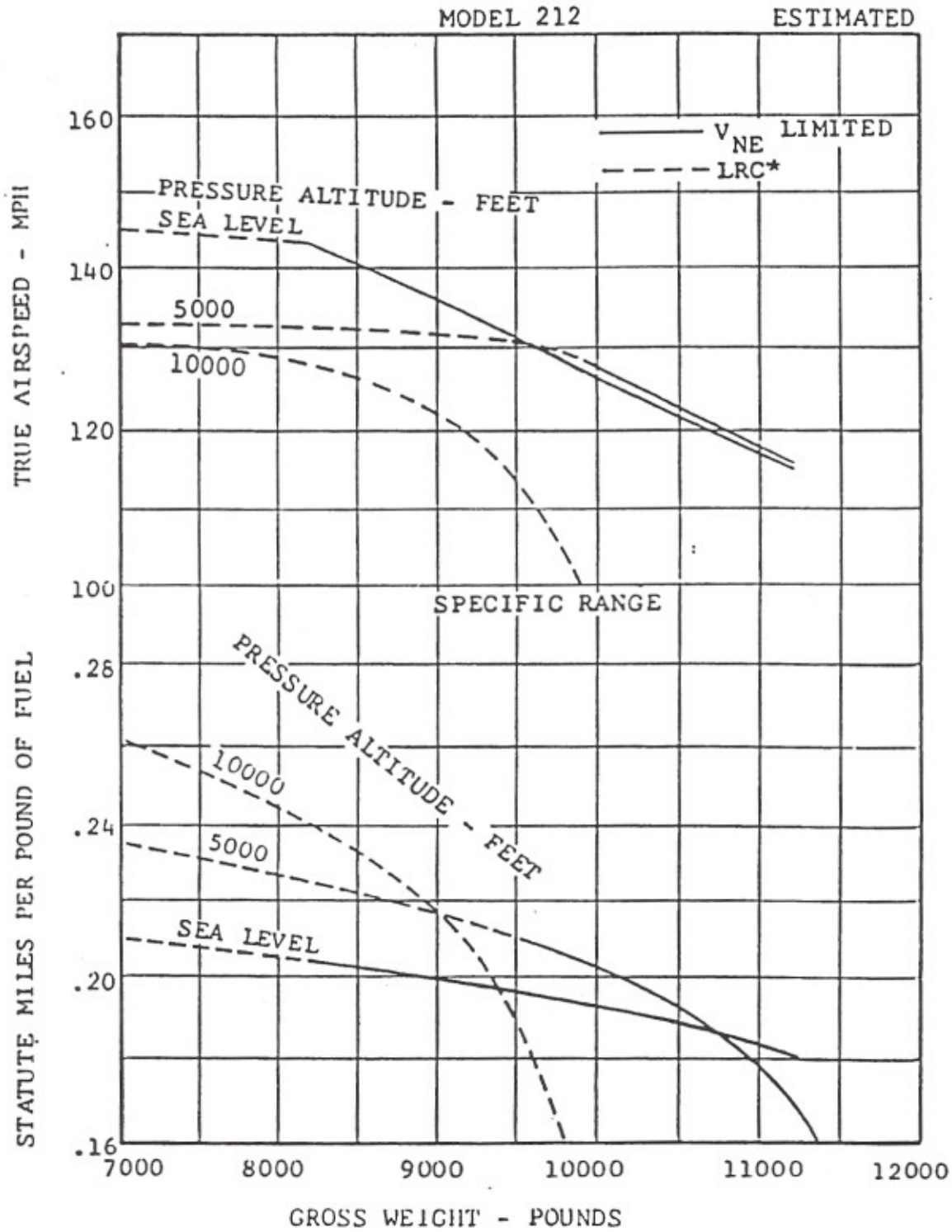
POWER: SEE NOTE BELOW
ENGINE RPM 100%
GENERATOR 150 AMPS (EA.)

SKID HEIGHT 4 FEET
HEATER ON OR OFF
0° TO 52°C



212099-41

TYPICAL
 CRUISE PERFORMANCE, TWIN ENGINE
 ICAO STANDARD DAY (ISA)



*LRC = Long Range Cruise

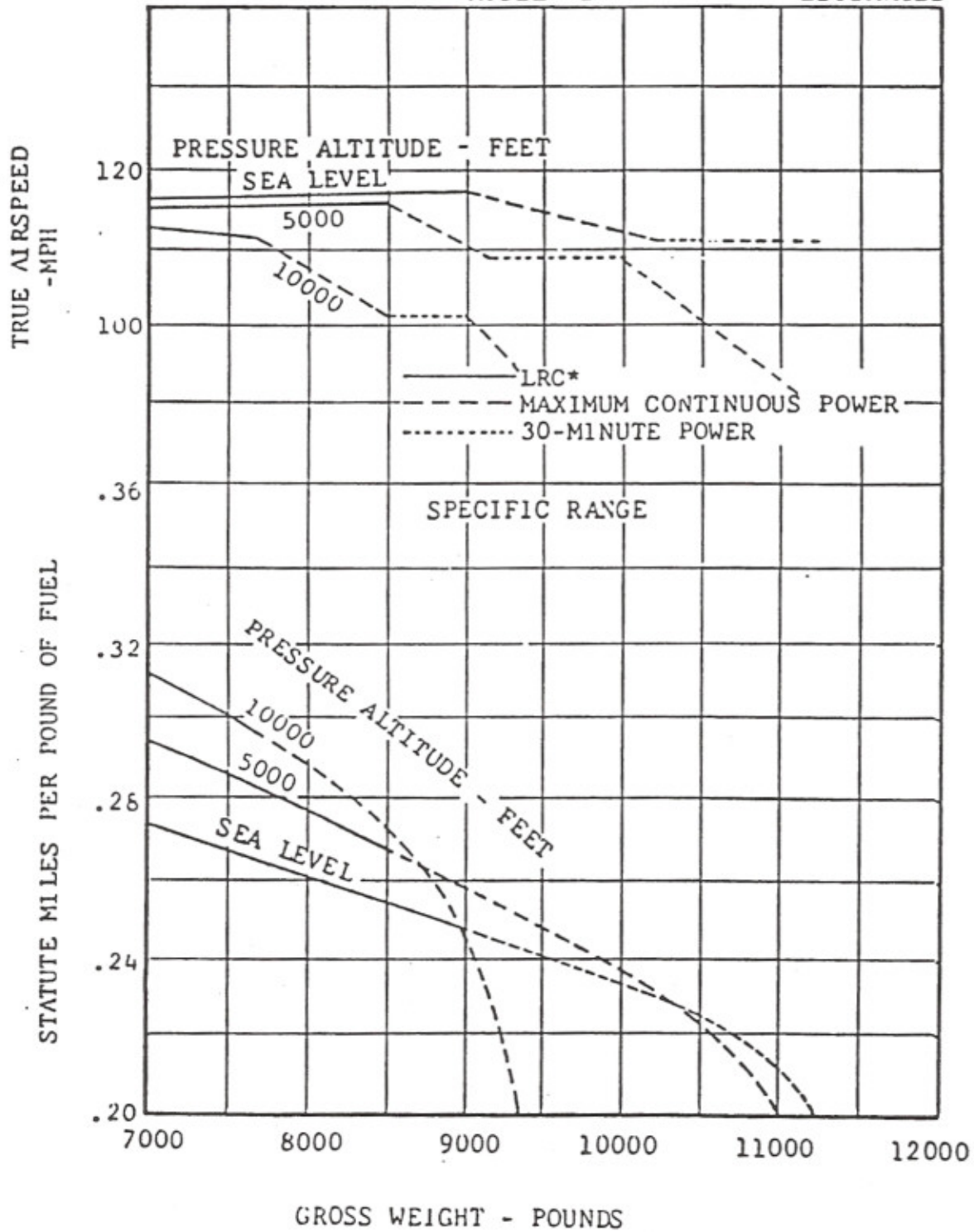
TYPICAL

TYPICAL

CRUISE PERFORMANCE, SINGLE ENGINE
ICAO STANDARD DAY (ISA)

MODEL 212

ESTIMATED

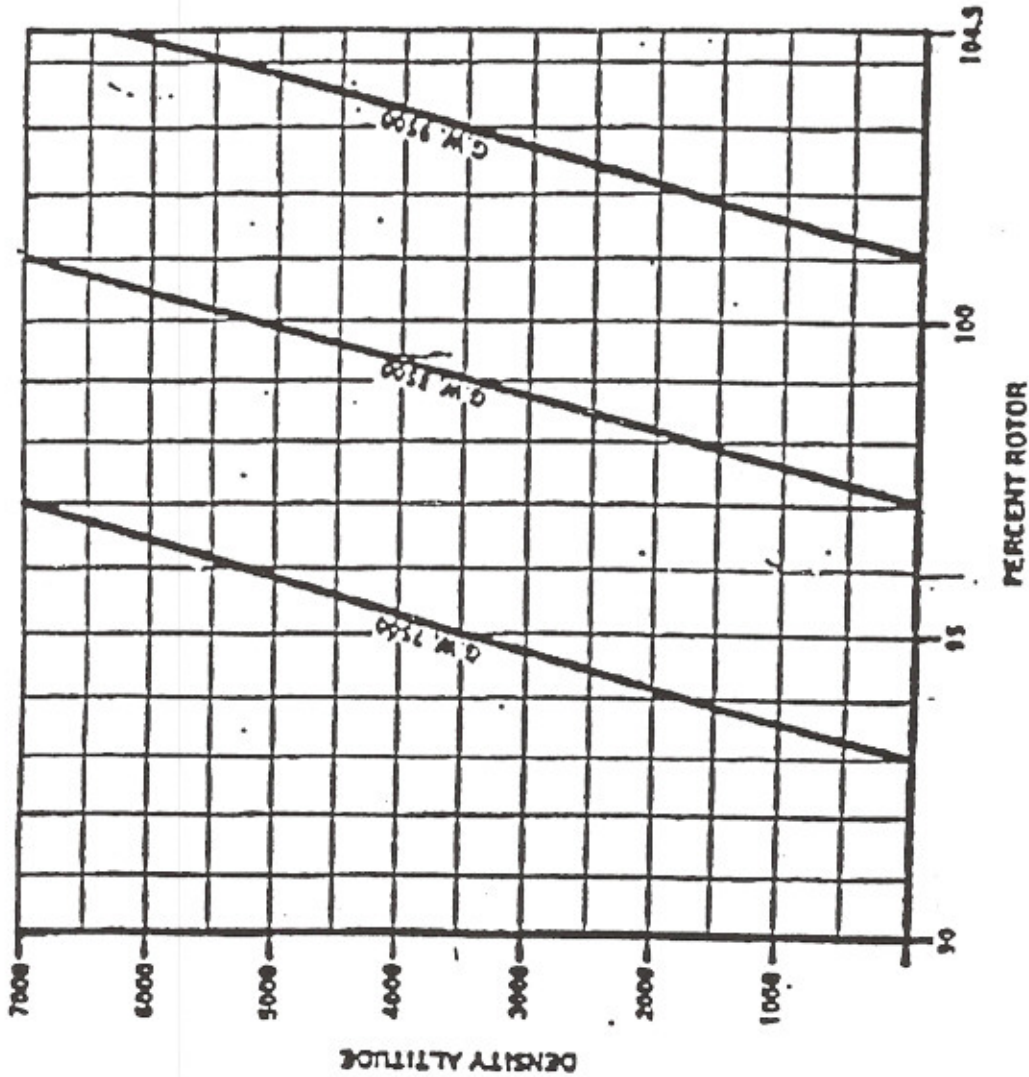


*LRC = Long Range Cruise

TYPICAL

**AUTOROTATION
RPM CHART**

MODEL 212



TOLERANCE ± 2.5%

DATE	CAT A	MAX STAY UP	HQGE	S/E TORQUE
20	11380	11800	10950	64.00
21	11320	11740	10940	63.50
22	11260	11680	10930	63.00
23	11200	11620	10920	62.50
24	11140	11560	10910	62.00
25	11080	11500	10900	61.50
26	11020	11440	10890	61.00
27	10960	11380	10880	60.50
28	10900	11320	10870	60.00
29	10840	11260	10860	59.50
30	10780	11200	10850	59.00
31	10720	11140	10840	58.50
32	10660	11080	10830	58.00
33	10600	11020	10820	57.50
34	10540	10960	10810	57.00
35	10480	10900	10800	56.50
36	10420	10840	10790	56.00
37	10360	10780	10780	55.50
38	10300	10720	10770	55.00
39	10240	10660	10760	54.50
40	10180	10600	10750	54.00
41	10120	10540	10740	53.50
42	10060	10480	10730	53.00
43	10000	10420	10720	52.50
44	9940	10360	10710	52.00
45	9880	10300	10700	51.50
46	9820	10240	10690	51.00
47	9760	10180	10680	50.50
48	9700	10120	10670	50.00
49	9640	10060	10660	49.50
50	9580	10000	10650	49.00
51	9520	9940	10640	48.50

BELL 212/412

PILOT TRAINING RECORD

Name: _____ Date: _____ Ground training time: _____
 Flight time: _____

Registration: _____ Instructor: _____ Day Night

Exam completed: Oral _____ Written _____ VMC IMC

Mark Items: S(Satisfactory) SB(Satisfactory with Briefing) U(Unsatisfactory)

NORMAL PROCEDURES

<u>FLIGHT MANUAL</u>	
All sections _____	<input type="checkbox"/>
Power checks _____	<input type="checkbox"/>
Topping checks _____	<input type="checkbox"/>
Weight and balance _____	<input type="checkbox"/>
<u>PRE-FLIGHT</u>	
Exterior _____	<input type="checkbox"/>
Interior _____	<input type="checkbox"/>
Documents _____	<input type="checkbox"/>
Cockpit checks _____	<input type="checkbox"/>
<u>FLIGHT PLANNING</u>	
Weather briefing _____	<input type="checkbox"/>
General _____	<input type="checkbox"/>
<u>DEPARTURE</u>	
_____	<input type="checkbox"/>
<u>CRUISE CHECKS</u>	
_____	<input type="checkbox"/>
<u>APPROACH/LANDING</u>	
_____	<input type="checkbox"/>

EMERGENCY/MALFUNCTION PROCEDURES

<u>POWER PLANT (cont'd)</u>	
Engine chip light _____	<input type="checkbox"/>
Lubrication systems _____	<input type="checkbox"/>
(a) Low pressure _____	<input type="checkbox"/>
(b) High temperature _____	<input type="checkbox"/>
Engine fire _____	<input type="checkbox"/>
(a) Single engine _____	<input type="checkbox"/>
(b) Dual engine _____	<input type="checkbox"/>
Air restart _____	<input type="checkbox"/>
<u>ELECTRICAL SYSTEM</u>	
<u>D.C. System</u>	
(a) No.1 gen. failure _____	<input type="checkbox"/>
(b) No.2 gen. failure _____	<input type="checkbox"/>
(c) Dual gen. failure _____	<input type="checkbox"/>
Bat/Gen switching _____	<input type="checkbox"/>
D.C. manual bus switch _____	<input type="checkbox"/>
<u>A.C. system</u>	
(a) No.1 inverter failure _____	<input type="checkbox"/>
(b) No.2 inverter failure _____	<input type="checkbox"/>
(c) Dual inverter failure _____	<input type="checkbox"/>
(d) Nav. AC switch _____	<input type="checkbox"/>

EMERGENCY/MALFUNCTION PROCEDURES

<u>POWER PLANT</u>	
Engine failure on take off _____	<input type="checkbox"/>
Engine failure in cruise _____	<input type="checkbox"/>
Engine failure on approach _____	<input type="checkbox"/>
Dual engine failure _____	<input type="checkbox"/>
Fuel control failure _____	<input type="checkbox"/>
(a) High side _____	<input type="checkbox"/>
(b) Low side _____	<input type="checkbox"/>
Manual throttle _____	<input type="checkbox"/>
(a) Take-off _____	<input type="checkbox"/>
(b) Cruise _____	<input type="checkbox"/>
(c) Landing _____	<input type="checkbox"/>

<u>CONTROL SYSTEM</u>	
<u>No.1 hyd. system failure</u>	
(a) Take off _____	<input type="checkbox"/>
(b) Cruise _____	<input type="checkbox"/>
(c) Landing _____	<input type="checkbox"/>
<u>No.2 hyd. system failure</u>	
(a) Take off _____	<input type="checkbox"/>
(b) Cruise _____	<input type="checkbox"/>
(c) Landing _____	<input type="checkbox"/>
AFCS/Helipilot malfunctions _____	<input type="checkbox"/>
AFCS/Helipilot failure _____	<input type="checkbox"/>
Fixed pitch T/R failure _____	<input type="checkbox"/>
(a) Left _____	<input type="checkbox"/>
(b) Right _____	<input type="checkbox"/>
Tail rotor failure _____	<input type="checkbox"/>

EMERGENCY/MALFUNCTION PROCEDURES

COMMENTS / OTHER TRAINING:

<u>GENERAL</u>	
C/Box	
(a) Pressure	
(b) Temperature	
(c) Chip light	
Transmission	
(a) Pressure	
(b) Temperature	
(c) Chip light	
Baggage fire	
Electrical fire	
Cabin fire	
Particle separator failure	
(a) Closed	
(b) Open	
Boost pump failure	
(a) Automatic system	
(b) Limitations with no pressure	
Fuel low light	
Communication failure	

OPERATIONS SPECIFICATIONS PROCEDURES
(where applicable)

Hover exit	
Hoisting	
Rappelling	
Approach minima 150 and 1/2	

CERTIFIED competent in accordance with ANO VII No.6 Part V Para.43 (4).

Date: _____ Training Pilot: _____

INCHES — CENTIMETERS CONVERSION

Inches	0	1	2	3	4	5	6	7	8	9
	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.
0	.....	2.54	5.08	7.62	10.16	12.70	15.24	17.78	20.32	22.86
10	25.40	27.94	30.48	33.02	35.56	38.10	40.64	43.18	45.72	48.26
20	50.80	53.34	55.88	58.42	60.96	63.50	66.04	68.58	71.12	73.66
30	76.20	78.74	81.28	83.82	86.36	88.90	91.44	93.98	96.52	99.06
40	101.60	104.14	106.68	109.22	111.76	114.30	116.84	119.38	121.92	124.46
50	127.00	129.54	132.08	134.62	137.16	139.70	142.24	144.78	147.32	149.86
60	152.40	154.94	157.48	160.02	162.56	165.10	167.64	170.18	172.72	175.26
70	177.80	180.34	182.88	185.42	187.96	190.50	193.04	195.58	198.12	200.66
80	203.20	205.74	208.28	210.82	213.36	215.90	218.44	220.98	223.52	226.06
90	228.60	231.14	233.68	236.22	238.76	241.30	243.84	246.38	248.92	251.46
100	254.00	256.54	259.08	261.62	264.16	266.70	269.24	271.78	274.32	276.86

FEET — METERS CONVERSION

Feet	0	1	2	3	4	5	6	7	8	9
	Meters	Meters	Meters	Meters	Meters	Meters	Meters	Meters	Meters	Meters
0	.....	0.305	0.610	0.914	1.219	1.524	1.829	2.134	2.436	2.743
10	3.048	3.353	3.658	3.962	4.267	4.572	4.877	5.182	5.486	5.791
20	6.096	6.401	6.706	7.010	7.315	7.620	7.925	8.229	8.534	8.839
30	9.144	9.449	9.753	10.058	10.363	10.668	10.972	11.277	11.582	11.887
40	12.192	12.496	12.801	13.106	13.411	13.716	14.020	14.325	14.630	14.935
50	15.239	15.544	15.849	16.154	16.459	16.763	17.068	17.373	17.678	17.983
60	18.287	18.592	18.897	19.202	19.507	19.811	20.116	20.421	20.726	21.031
70	21.335	21.640	21.945	22.250	22.555	22.859	23.164	23.469	23.774	24.079
80	24.383	24.688	24.993	25.298	25.602	25.907	26.212	26.517	26.822	27.126
90	27.431	27.736	28.041	28.346	28.651	28.955	29.260	29.565	29.870	30.174
100	30.479	30.784	31.089	31.394	31.698	32.003	32.308	32.613	32.918	33.222

POUND — KILOGRAMS CONVERSION

Pounds	0	1	2	3	4	5	6	7	8	9
	Kilo-grams	Kilo-grams	Kilo-grams	Kilo-grams	Kilo-grams	Kilo-grams	Kilo-grams	Kilo-grams	Kilo-grams	Kilo-grams
0	.....	0.454	0.907	1.361	1.814	2.268	2.722	3.175	3.629	4.082
10	4.536	4.990	5.443	5.897	6.350	6.804	7.257	7.711	8.165	8.618
20	9.072	9.525	9.979	10.433	10.886	11.340	11.793	12.247	12.701	13.154
30	13.608	14.061	14.515	14.969	15.422	15.876	16.329	16.783	17.237	17.690
40	18.144	18.597	19.051	19.504	19.958	20.412	20.865	21.319	21.772	22.226
50	22.680	23.133	23.587	24.040	24.494	24.948	25.401	25.855	26.308	26.762
60	27.216	27.669	28.123	28.576	29.030	29.484	29.937	30.391	30.844	31.298
70	31.751	32.205	32.659	33.112	33.566	34.019	34.473	34.927	35.380	35.834
80	36.287	36.741	37.195	37.648	38.102	38.555	39.009	39.463	39.916	40.370
90	40.823	41.277	41.730	42.184	42.638	43.091	43.545	43.998	44.453	44.906
100	45.359	45.813	46.266	46.720	47.174	47.627	48.081	48.534	48.988	49.442

GALLONS — LITERS CONVERSION

Gallons	0	1	2	3	4	5	6	7	8	9
	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters
0	.....	3.785	7.571	11.356	15.142	18.927	22.713	26.498	30.283	34.069
10	37.854	41.640	45.425	49.211	52.996	56.781	60.567	64.352	68.138	71.923
20	75.709	79.494	83.280	87.065	90.850	94.636	98.421	102.21	105.99	109.78
30	113.56	117.35	121.13	124.92	128.70	132.49	136.28	140.06	143.85	147.63
40	151.42	155.20	158.99	162.77	166.56	170.34	174.13	177.92	181.70	185.49
50	189.27	193.06	196.84	200.63	204.41	208.20	211.98	215.77	219.56	223.34
60	227.13	230.91	234.70	238.48	242.27	246.05	249.84	253.62	257.41	261.19
70	264.98	268.77	272.55	276.34	280.12	283.91	287.69	291.48	295.26	299.05
80	302.83	306.62	310.41	314.19	317.98	321.76	325.55	329.33	333.12	336.90
90	340.69	344.47	348.26	352.05	355.83	359.62	363.40	367.19	370.97	374.76
100	378.54	382.33	386.11	389.90	393.69	397.47	401.26	405.04	408.83	412.61

VELOCITY CONVERSION

VELOCITY CONVERSION TABLE		
KNOTS	MPH	KILOMETERS (KM)
4	5	8
9	10	16
13	15	24
17	20	32
22	25	40
26	30	48
30	35	56
35	40	64
39	45	72
43	50	80
48	55	89
52	60	97
56	65	105
61	70	113
65	75	121
69	80	129
74	85	137
78	90	145
82	95	153
87	100	161
91	105	169
95	110	177
100	115	185
104	120	193
108	125	201
113	130	209
117	135	217
122	140	225
126	145	233
130	150	241