

Fast Mars - 120 Day Journey	2016-12-04	keithl@serversky.com	rotation subtracted from launch and entry						
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<i>Ellipse shape</i>	Hohmann	Fast 1	Fast 2	Fast 3	Fast 4	Fast 5	Fast 6	Fast 7	Fast 8
m/s launch E	11023.133	11800.730	11840.529	11974.435	12229.580	12665.060	13492.162	14786.966	19522.442
m/s entry M	5406.935	9991.155	9500.000	9000.000	8500.000	8000.000	7500.000	7270.647	8941.415
days	258.8648058	120	120	120	120	120	120	120	120
		<i>slowest</i>	<i>slower</i>	<i>slower</i>	<i>slower</i>	<i>slower</i>	<i>slower</i>	<i>slowest</i>	<i>stupid fast</i>
		<i>Earth</i>	<i>Mars</i>	<i>Mars</i>	<i>Mars</i>	<i>Mars</i>	<i>Mars</i>	<i>Mars</i>	
		<i>launch</i>	<i>entry</i>	<i>entry</i>	<i>entry</i>	<i>entry</i>	<i>entry</i>	<i>entry</i>	

Mars hyperbolic - no lift or drag
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hyper angle	48.003	8.203	9.220	10.478	12.033	13.996	16.538	17.970	10.643
lapse time	118.86	52.07	55.18	58.79	62.95	67.80	73.55	76.58	59.25
m/s V ∞	2075.38	8654.21	8082.22	7488.14	6879.12	6250.78	5596.63	5285.31	7417.62
m semi	-9943446.57	-571842.33	-655647.61	-763806.97	-905036.66	-1096132.72	-1367346.60	-1533168.25	-778398.42
eccentricity	1.34557	7.00900	6.24093	5.49878	4.79675	4.13484	3.51304	3.24124	5.41445
lapse angle	0.10552	0.08542	0.08608	0.08688	0.08785	0.08905	0.09058	0.09142	0.08698

Guesses and Calculations

m below E	1.0000E+00	7.5000E+08	1.9481E+09	4.0138E+09	7.3298E+09	1.2694E+10	2.2651E+10	3.7500E+10	8.0939E+10
m above M	1.0000E+00	9.0101E+10	7.3854E+10	5.8340E+10	4.3811E+10	3.0129E+10	1.6582E+10	6.9420E+09	1
m R perhe	1.4960E+11	1.4885E+11	1.4765E+11	1.4558E+11	1.4227E+11	1.3690E+11	1.2695E+11	1.1210E+11	6.8659E+10
m R aphe	2.2794E+11	3.1804E+11	3.0179E+11	2.8628E+11	2.7175E+11	2.5807E+11	2.4452E+11	2.3488E+11	2.2794E+11
m semi	1.8877E+11	2.3344E+11	2.2472E+11	2.1593E+11	2.0701E+11	1.9749E+11	1.8573E+11	1.7349E+11	1.4830E+11
eccentricity	0.20751	0.36238	0.34296	0.32579	0.31274	0.30677	0.31651	0.35386	0.53702
m/s v0	27104.929	25582.012	25870.623	26221.764	26657.036	27236.341	28179.402	29571.233	35462.320
r/s omega	1.4046E-07	1.0214E-07	1.0814E-07	1.1481E-07	1.2231E-07	1.3127E-07	1.4392E-07	1.5942E-07	2.0172E-07
cos factor	1.8064E+11	2.0279E+11	1.9829E+11	1.9301E+11	1.8676E+11	1.7890E+11	1.6713E+11	1.5177E+11	1.0553E+11
cos θ E	1.00000	0.98115	0.94901	0.89081	0.79434	0.63854	0.37022	0.04094	-0.54853
cos θ M	-1.00000	-0.30449	-0.37928	-0.47032	-0.57763	-0.70130	-0.84290	-0.94439	-1.00000
radians θ E	0.00001	0.19446	0.32072	0.47167	0.65288	0.87820	1.19155	1.52984	2.15140
radians θ M	3.14159	1.88020	1.95982	2.06045	2.18662	2.34801	2.57346	2.80653	3.14159
m/s perp V E	32729.360	34677.763	34290.901	33831.704	33279.280	32571.444	31481.398	29999.661	25016.044
m/s perp V M	21480.498	22759.248	22505.348	22203.974	21841.414	21376.857	20661.452	19688.978	16418.197
m/s radial V E	0.050	1791.409	2797.099	3881.558	5064.439	6430.091	8285.354	10455.399	15923.377
m/s radial V M	0.033	8830.279	8209.736	7538.902	6805.325	5956.160	4799.030	3440.924	0.052
m/s delta V E	2944.683	5210.704	5303.755	5607.577	6153.113	7008.006	8457.302	10457.609	16622.087
m/s delta V M	2648.890	8935.945	8368.827	7780.891	7179.643	6561.423	5920.918	5617.579	7711.191
ecc anom θ E	0.0000071	0.1332575	0.2253136	0.3394348	0.4804600	0.6592275	0.9087925	1.1710688	1.5871078
ecc anom θ M	3.1415855	1.5056767	1.6125593	1.7423212	1.9000021	2.0974851	2.3716195	2.6614348	3.1415876
mean anom E	0.0000057	0.0851101	0.1486912	0.2309628	0.3359138	0.4713310	0.6591405	0.8451016	1.0501550
mean anom M	3.1415840	1.1440620	1.2698940	1.4213154	1.6040528	1.8322925	2.1512910	2.4979786	3.1415850
sec θ E	40.315	833296.815	1374979.511	2011692.029	2746350.743	3590666.824	4579945.804	5301068.488	5206011.164
sec θ M	22365959.539	11201296.816	11742979.508	12379692.030	13114350.745	13958666.824	14947945.803	15669068.488	15574011.165
seconds	22365919.224	10368000.001	10367999.998	10368000.001	10368000.002	10368000.000	10367999.999	10368000.000	10368000.001