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30517-1 & 30517-8

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FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30517-1 & 30517-8
Fuel Injector Offset vs Battery Voltage vs VAC

LS1	MANIFOLD VACUUM (kPa)																
Voltage	0*	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
4.5	3.357	3.372	3.387	3.403	3.418	3.434	3.449	3.464	3.480	3.495	3.510	3.526	3.541	3.557	3.572	3.587	3.603
5.0	3.128	3.142	3.156	3.171	3.185	3.199	3.214	3.228	3.242	3.257	3.271	3.285	3.299	3.314	3.328	3.342	3.357
5.5	2.914	2.927	2.941	2.954	2.968	2.981	2.994	3.008	3.021	3.034	3.048	3.061	3.074	3.088	3.101	3.114	3.128
6.0	2.715	2.728	2.740	2.753	2.765	2.777	2.790	2.802	2.815	2.827	2.840	2.852	2.864	2.877	2.889	2.902	2.914
6.5	2.530	2.542	2.553	2.565	2.576	2.588	2.599	2.611	2.623	2.634	2.646	2.657	2.669	2.681	2.692	2.704	2.715
7.0	2.357	2.368	2.379	2.390	2.400	2.411	2.422	2.433	2.444	2.454	2.465	2.476	2.487	2.498	2.508	2.519	2.530
7.5	2.196	2.206	2.216	2.227	2.237	2.247	2.257	2.267	2.277	2.287	2.297	2.307	2.317	2.327	2.337	2.347	2.357
8.0	2.046	2.056	2.065	2.075	2.084	2.093	2.103	2.112	2.121	2.131	2.140	2.150	2.159	2.168	2.178	2.187	2.196
8.5	1.907	1.916	1.924	1.933	1.942	1.950	1.959	1.968	1.977	1.985	1.994	2.003	2.012	2.020	2.029	2.038	2.046
9.0	1.777	1.785	1.793	1.801	1.809	1.817	1.825	1.834	1.842	1.850	1.858	1.866	1.874	1.882	1.891	1.899	1.907
9.5	1.655	1.663	1.671	1.678	1.686	1.693	1.701	1.708	1.716	1.724	1.731	1.739	1.746	1.754	1.761	1.769	1.777
10.0	1.542	1.549	1.557	1.564	1.571	1.578	1.585	1.592	1.599	1.606	1.613	1.620	1.627	1.634	1.641	1.648	1.655
10.5	1.437	1.444	1.450	1.457	1.463	1.470	1.477	1.483	1.490	1.496	1.503	1.509	1.516	1.523	1.529	1.536	1.542
11.0	1.339	1.345	1.351	1.357	1.364	1.370	1.376	1.382	1.388	1.394	1.400	1.406	1.413	1.419	1.425	1.431	1.437
11.5	1.248	1.253	1.259	1.265	1.270	1.276	1.282	1.288	1.293	1.299	1.305	1.310	1.316	1.322	1.328	1.333	1.339
12.0	1.162	1.168	1.173	1.178	1.184	1.189	1.194	1.200	1.205	1.210	1.216	1.221	1.226	1.232	1.237	1.242	1.248
12.5	1.083	1.088	1.093	1.098	1.103	1.108	1.113	1.118	1.123	1.128	1.133	1.138	1.143	1.148	1.153	1.158	1.162
13.0	1.009	1.014	1.018	1.023	1.028	1.032	1.037	1.042	1.046	1.051	1.055	1.060	1.065	1.069	1.074	1.079	1.083
13.5	0.940	0.945	0.949	0.953	0.958	0.962	0.966	0.970	0.975	0.979	0.983	0.988	0.992	0.996	1.001	1.005	1.009
14.0	0.876	0.880	0.884	0.888	0.892	0.896	0.900	0.904	0.908	0.912	0.916	0.920	0.924	0.928	0.932	0.936	0.940
14.5	0.816	0.820	0.824	0.828	0.831	0.835	0.839	0.843	0.846	0.850	0.854	0.857	0.861	0.865	0.869	0.872	0.876
15.0	0.761	0.764	0.768	0.771	0.775	0.778	0.782	0.785	0.788	0.792	0.795	0.799	0.802	0.806	0.809	0.813	0.816
15.5	0.709	0.712	0.715	0.718	0.722	0.725	0.728	0.731	0.735	0.738	0.741	0.744	0.748	0.751	0.754	0.757	0.761
16.0	0.660	0.663	0.666	0.669	0.672	0.675	0.678	0.682	0.685	0.688	0.691	0.694	0.697	0.700	0.703	0.706	0.709
16.5	0.615	0.618	0.621	0.624	0.627	0.629	0.632	0.635	0.638	0.641	0.643	0.646	0.649	0.652	0.655	0.658	0.660
17.0	0.573	0.576	0.579	0.581	0.584	0.586	0.589	0.592	0.594	0.597	0.600	0.602	0.605	0.607	0.610	0.613	0.615
17.5	0.534	0.537	0.539	0.541	0.544	0.546	0.549	0.551	0.554	0.556	0.559	0.561	0.563	0.566	0.568	0.571	0.573
18.0	0.498	0.500	0.502	0.505	0.507	0.509	0.511	0.514	0.516	0.518	0.520	0.523	0.525	0.527	0.530	0.532	0.534

*Pick which table that best fits in your ECU



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30517-1 & 30517-8
Fuel Injector Offset vs Battery Voltage vs VAC (continued)

LS2	MANIFOLD VACUUM (kPa)																
Voltage	-80	-70	-60	-50	-40	-30	-20	-10	0*	10	20	30	40	50	60	70	80
4.5	3.128	3.156	3.185	3.214	3.242	3.271	3.299	3.328	3.357	3.387	3.418	3.449	3.480	3.510	3.541	3.572	3.603
5.0	2.914	2.941	2.968	2.994	3.021	3.048	3.074	3.101	3.128	3.156	3.185	3.214	3.242	3.271	3.299	3.328	3.357
5.5	2.715	2.740	2.765	2.790	2.815	2.840	2.864	2.889	2.914	2.941	2.968	2.994	3.021	3.048	3.074	3.101	3.128
6.0	2.530	2.553	2.576	2.599	2.623	2.646	2.669	2.692	2.715	2.740	2.765	2.790	2.815	2.840	2.864	2.889	2.914
6.5	2.357	2.379	2.400	2.422	2.444	2.465	2.487	2.508	2.530	2.553	2.576	2.599	2.623	2.646	2.669	2.692	2.715
7.0	2.196	2.216	2.237	2.257	2.277	2.297	2.317	2.337	2.357	2.379	2.400	2.422	2.444	2.465	2.487	2.508	2.530
7.5	2.046	2.065	2.084	2.103	2.121	2.140	2.159	2.178	2.196	2.216	2.237	2.257	2.277	2.297	2.317	2.337	2.357
8.0	1.907	1.924	1.942	1.959	1.977	1.994	2.012	2.029	2.046	2.065	2.084	2.103	2.121	2.140	2.159	2.178	2.196
8.5	1.777	1.793	1.809	1.825	1.842	1.858	1.874	1.891	1.907	1.924	1.942	1.959	1.977	1.994	2.012	2.029	2.046
9.0	1.655	1.671	1.686	1.701	1.716	1.731	1.746	1.761	1.777	1.793	1.809	1.825	1.842	1.858	1.874	1.891	1.907
9.5	1.542	1.557	1.571	1.585	1.599	1.613	1.627	1.641	1.655	1.671	1.686	1.701	1.716	1.731	1.746	1.761	1.777
10.0	1.437	1.450	1.463	1.477	1.490	1.503	1.516	1.529	1.542	1.557	1.571	1.585	1.599	1.613	1.627	1.641	1.655
10.5	1.339	1.351	1.364	1.376	1.388	1.400	1.413	1.425	1.437	1.450	1.463	1.477	1.490	1.503	1.516	1.529	1.542
11.0	1.248	1.259	1.270	1.282	1.293	1.305	1.316	1.328	1.339	1.351	1.364	1.376	1.388	1.400	1.413	1.425	1.437
11.5	1.162	1.173	1.184	1.194	1.205	1.216	1.226	1.237	1.248	1.259	1.270	1.282	1.293	1.305	1.316	1.328	1.339
12.0	1.083	1.093	1.103	1.113	1.123	1.133	1.143	1.153	1.162	1.173	1.184	1.194	1.205	1.216	1.226	1.237	1.248
12.5	1.009	1.018	1.028	1.037	1.046	1.055	1.065	1.074	1.083	1.093	1.103	1.113	1.123	1.133	1.143	1.153	1.162
13.0	0.940	0.949	0.958	0.966	0.975	0.983	0.992	1.001	1.009	1.018	1.028	1.037	1.046	1.055	1.065	1.074	1.083
13.5	0.876	0.884	0.892	0.900	0.908	0.916	0.924	0.932	0.940	0.949	0.958	0.966	0.975	0.983	0.992	1.001	1.009
14.0	0.816	0.824	0.831	0.839	0.846	0.854	0.861	0.869	0.876	0.884	0.892	0.900	0.908	0.916	0.924	0.932	0.940
14.5	0.761	0.768	0.775	0.782	0.788	0.795	0.802	0.809	0.816	0.824	0.831	0.839	0.846	0.854	0.861	0.869	0.876
15.0	0.709	0.715	0.722	0.728	0.735	0.741	0.748	0.754	0.761	0.768	0.775	0.782	0.788	0.795	0.802	0.809	0.816
15.5	0.660	0.666	0.672	0.678	0.685	0.691	0.697	0.703	0.709	0.715	0.722	0.728	0.735	0.741	0.748	0.754	0.761
16.0	0.615	0.621	0.627	0.632	0.638	0.643	0.649	0.655	0.660	0.666	0.672	0.678	0.685	0.691	0.697	0.703	0.709
16.5	0.573	0.579	0.584	0.589	0.594	0.600	0.605	0.610	0.615	0.621	0.627	0.632	0.638	0.643	0.649	0.655	0.660
17.0	0.534	0.539	0.544	0.549	0.554	0.559	0.563	0.568	0.573	0.579	0.584	0.589	0.594	0.600	0.605	0.610	0.615
17.5	0.498	0.502	0.507	0.511	0.516	0.520	0.525	0.530	0.534	0.539	0.544	0.549	0.554	0.559	0.563	0.568	0.573
18.0	0.464	0.468	0.472	0.476	0.481	0.485	0.489	0.493	0.498	0.502	0.507	0.511	0.516	0.520	0.525	0.530	0.534
18.5	0.432	0.436	0.440	0.444	0.448	0.452	0.456	0.460	0.464	0.468	0.472	0.476	0.481	0.485	0.489	0.493	0.498
19.0	0.403	0.406	0.410	0.414	0.417	0.421	0.425	0.428	0.432	0.436	0.440	0.444	0.448	0.452	0.456	0.460	0.464
19.5	0.375	0.379	0.382	0.385	0.389	0.392	0.396	0.399	0.403	0.406	0.410	0.414	0.417	0.421	0.425	0.428	0.432
20.0	0.350	0.353	0.356	0.359	0.362	0.366	0.369	0.372	0.375	0.379	0.382	0.385	0.389	0.392	0.396	0.399	0.403
20.5	0.326	0.329	0.332	0.335	0.338	0.341	0.344	0.347	0.350	0.353	0.356	0.359	0.362	0.366	0.369	0.372	0.375

*Pick which table that best fits in your ECU



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30517-1 & 30517-8
Fuel Injector Offset vs Battery Voltage vs VAC (continued)

COBALT	MANIFOLD VACUUM (kPa)																																
Voltage	-120	-114	-108	-101	-95	-89	-83	-76	-70	-64	-58	-51	-45	-39	-33	-26	-20	-14	-8	-1	5	11	18	24	30	36	43	49	55	61	68	74	80
4.5	2.677	2.693	2.708	2.727	2.743	2.759	2.774	2.793	2.809	2.825	2.841	2.859	2.875	2.891	2.907	2.925	2.941	2.957	2.973	2.991	3.007	3.023	3.041	3.057	3.073	3.089	3.107	3.123	3.139	3.155	3.173	3.189	3.205
5.0	2.540	2.555	2.570	2.587	2.602	2.617	2.632	2.650	2.665	2.680	2.695	2.713	2.728	2.743	2.758	2.775	2.790	2.805	2.820	2.838	2.853	2.868	2.886	2.901	2.916	2.931	2.948	2.963	2.978	2.993	3.011	3.026	3.041
5.5	2.407	2.421	2.435	2.452	2.466	2.480	2.495	2.511	2.526	2.540	2.554	2.571	2.585	2.599	2.613	2.630	2.644	2.659	2.673	2.689	2.704	2.718	2.735	2.749	2.763	2.777	2.794	2.808	2.823	2.837	2.853	2.868	2.882
6.0	2.278	2.292	2.305	2.321	2.334	2.348	2.361	2.377	2.390	2.404	2.417	2.433	2.447	2.460	2.474	2.489	2.503	2.516	2.530	2.546	2.559	2.573	2.588	2.602	2.615	2.629	2.645	2.658	2.672	2.685	2.701	2.714	2.728
6.5	2.153	2.166	2.179	2.194	2.207	2.219	2.232	2.247	2.260	2.273	2.285	2.300	2.313	2.326	2.338	2.353	2.366	2.379	2.392	2.406	2.419	2.432	2.447	2.460	2.472	2.485	2.500	2.513	2.525	2.538	2.553	2.566	2.579
7.0	2.033	2.045	2.057	2.071	2.083	2.095	2.107	2.121	2.133	2.145	2.157	2.172	2.184	2.196	2.208	2.222	2.234	2.246	2.258	2.272	2.284	2.296	2.310	2.322	2.334	2.346	2.360	2.372	2.384	2.396	2.410	2.422	2.434
7.5	1.917	1.928	1.940	1.953	1.964	1.975	1.987	2.000	2.011	2.023	2.034	2.047	2.059	2.070	2.081	2.095	2.106	2.117	2.129	2.142	2.153	2.165	2.178	2.189	2.201	2.212	2.225	2.237	2.248	2.259	2.272	2.284	2.295
8.0	1.805	1.815	1.826	1.839	1.849	1.860	1.871	1.883	1.894	1.904	1.915	1.928	1.938	1.949	1.960	1.972	1.983	1.994	2.004	2.017	2.027	2.038	2.051	2.061	2.072	2.083	2.095	2.106	2.116	2.127	2.140	2.150	2.161
8.5	1.697	1.707	1.717	1.729	1.739	1.749	1.759	1.770	1.780	1.791	1.801	1.812	1.822	1.832	1.842	1.854	1.864	1.874	1.884	1.896	1.906	1.916	1.928	1.938	1.948	1.958	1.970	1.980	1.990	2.000	2.012	2.022	2.032
9.0	1.593	1.602	1.612	1.623	1.632	1.642	1.651	1.662	1.672	1.681	1.690	1.701	1.711	1.720	1.730	1.741	1.750	1.760	1.769	1.780	1.789	1.799	1.810	1.819	1.829	1.838	1.849	1.859	1.868	1.878	1.889	1.898	1.907
9.5	1.493	1.502	1.511	1.521	1.530	1.539	1.548	1.558	1.567	1.576	1.585	1.595	1.604	1.613	1.622	1.632	1.641	1.650	1.658	1.669	1.678	1.686	1.697	1.706	1.714	1.723	1.734	1.742	1.751	1.760	1.770	1.779	1.788
10.0	1.398	1.406	1.414	1.424	1.432	1.441	1.449	1.459	1.467	1.475	1.483	1.493	1.501	1.510	1.518	1.528	1.536	1.544	1.552	1.562	1.570	1.579	1.588	1.596	1.605	1.613	1.623	1.631	1.639	1.648	1.657	1.665	1.674
10.5	1.306	1.314	1.322	1.331	1.339	1.346	1.354	1.363	1.371	1.379	1.386	1.395	1.403	1.411	1.419	1.428	1.435	1.443	1.451	1.460	1.468	1.475	1.484	1.492	1.500	1.508	1.517	1.524	1.532	1.540	1.549	1.557	1.564
11.0	1.219	1.227	1.234	1.242	1.249	1.257	1.264	1.272	1.279	1.287	1.294	1.302	1.310	1.317	1.324	1.332	1.340	1.347	1.354	1.363	1.370	1.377	1.385	1.393	1.400	1.407	1.415	1.423	1.430	1.437	1.446	1.453	1.460
11.5	1.136	1.143	1.150	1.158	1.164	1.171	1.178	1.186	1.192	1.199	1.206	1.214	1.220	1.227	1.234	1.242	1.248	1.255	1.262	1.270	1.276	1.283	1.291	1.298	1.305	1.311	1.319	1.326	1.333	1.339	1.347	1.354	1.361
12.0	1.057	1.064	1.070	1.077	1.084	1.090	1.096	1.103	1.110	1.116	1.122	1.129	1.136	1.142	1.148	1.156	1.162	1.168	1.174	1.182	1.188	1.194	1.201	1.208	1.214	1.220	1.228	1.234	1.240	1.246	1.254	1.260	1.266
12.5	0.983	0.989	0.994	1.001	1.007	1.013	1.019	1.025	1.031	1.037	1.043	1.050	1.055	1.061	1.067	1.074	1.080	1.086	1.091	1.098	1.104	1.110	1.117	1.122	1.128	1.134	1.141	1.147	1.152	1.158	1.165	1.171	1.177
13.0	0.912	0.918	0.923	0.929	0.935	0.940	0.945	0.952	0.957	0.963	0.968	0.974	0.980	0.985	0.991	0.997	1.002	1.008	1.013	1.019	1.025	1.030	1.036	1.042	1.047	1.053	1.059	1.064	1.070	1.075	1.081	1.087	1.092
13.5	0.846	0.851	0.856	0.862	0.867	0.872	0.877	0.883	0.888	0.893	0.898	0.903	0.908	0.913	0.918	0.924	0.929	0.934	0.939	0.945	0.950	0.955	0.961	0.966	0.971	0.976	0.982	0.987	0.992	0.997	1.003	1.008	1.013
14.0	0.784	0.788	0.793	0.798	0.803	0.808	0.812	0.818	0.822	0.827	0.831	0.837	0.842	0.846	0.851	0.856	0.861	0.866	0.870	0.876	0.880	0.885	0.890	0.895	0.900	0.904	0.910	0.914	0.919	0.924	0.929	0.934	0.938
14.5	0.725	0.730	0.734	0.739	0.743	0.748	0.752	0.757	0.761	0.766	0.770	0.775	0.779	0.783	0.788	0.793	0.797	0.801	0.806	0.811	0.815	0.819	0.824	0.829	0.833	0.837	0.842	0.846	0.851	0.855	0.860	0.864	0.869
15.0	0.672	0.676	0.679	0.684	0.688	0.692	0.696	0.701	0.705	0.709	0.713	0.717	0.721	0.725	0.729	0.734	0.738	0.742	0.746	0.750	0.754	0.758	0.763	0.767	0.771	0.775	0.780	0.784	0.788	0.792	0.796	0.800	0.804
15.5	0.622	0.625	0.629	0.633	0.637	0.641	0.644	0.649	0.652	0.656	0.660	0.664	0.668	0.671	0.675	0.679	0.683	0.687	0.690	0.695	0.698	0.702	0.706	0.710	0.714	0.718	0.722	0.725	0.729	0.733	0.737	0.741	0.745
16.0	0.576	0.580	0.583	0.587	0.590	0.594	0.597	0.601	0.605	0.608	0.611	0.615	0.619	0.622	0.626	0.630	0.633	0.636	0.640	0.644	0.647	0.651	0.655	0.658	0.661	0.665	0.669	0.672	0.676	0.679	0.683	0.686	0.690
16.5	0.535	0.538	0.541	0.545	0.548	0.551	0.554	0.558	0.561	0.564	0.567	0.571	0.574	0.577	0.581	0.584	0.587	0.591	0.594	0.597	0.601	0.604	0.608	0.611	0.614	0.617	0.621	0.624	0.627	0.630	0.634	0.637	0.640
17.0	0.497	0.500	0.503	0.507	0.510	0.513	0.516	0.519	0.522	0.525	0.528	0.531	0.534	0.537	0.540	0.544	0.546	0.549	0.552	0.556	0.559	0.562	0.565	0.568	0.571	0.574	0.577	0.580	0.583	0.586	0.590	0.593	



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30517-1 & 30517-8
Fuel Injector Offset vs Battery Voltage vs VAC (continued)

LS3	MANIFOLD VACUUM (kPa)																																
Voltage	128	148	168	188	208	228	248	268	288	308	328	348	368	388	408	428	448	468	488	508	528	548	568	588	608	628	648	668	688	708	728	748	768
4.0	2.715	2.784	2.853	2.921	2.990	3.059	3.128	3.187	3.246	3.306	3.365	3.425	3.484	3.543	3.603	3.671	3.739	3.808	3.876	3.945	4.013	4.081	4.150	4.229	4.307	4.386	4.465	4.544	4.622	4.701	4.780	4.780	4.780
5.0	2.357	2.417	2.477	2.536	2.596	2.656	2.715	2.767	2.818	2.870	2.921	2.973	3.025	3.076	3.128	3.187	3.246	3.306	3.365	3.425	3.484	3.543	3.603	3.671	3.739	3.808	3.876	3.945	4.013	4.081	4.150	4.150	4.150
6.0	2.046	2.098	2.150	2.202	2.254	2.305	2.357	2.402	2.447	2.492	2.536	2.581	2.626	2.671	2.715	2.767	2.818	2.870	2.921	2.973	3.025	3.076	3.128	3.187	3.246	3.306	3.365	3.425	3.484	3.543	3.603	3.603	3.603
7.0	1.777	1.822	1.867	1.912	1.957	2.001	2.046	2.085	2.124	2.163	2.202	2.241	2.280	2.318	2.357	2.402	2.447	2.492	2.536	2.581	2.626	2.671	2.715	2.767	2.818	2.870	2.921	2.973	3.025	3.076	3.128	3.128	3.128
8.0	1.542	1.581	1.620	1.660	1.699	1.738	1.777	1.810	1.844	1.878	1.912	1.945	1.979	2.013	2.046	2.085	2.124	2.163	2.202	2.241	2.280	2.318	2.357	2.402	2.447	2.492	2.536	2.581	2.626	2.671	2.715	2.715	2.715
9.0	1.339	1.373	1.407	1.441	1.475	1.508	1.542	1.572	1.601	1.630	1.660	1.689	1.718	1.747	1.777	1.810	1.844	1.878	1.912	1.945	1.979	2.013	2.046	2.085	2.124	2.163	2.202	2.241	2.280	2.318	2.357	2.357	2.357
10.0	1.162	1.192	1.221	1.251	1.280	1.310	1.339	1.364	1.390	1.415	1.441	1.466	1.492	1.517	1.542	1.572	1.601	1.630	1.660	1.689	1.718	1.747	1.777	1.810	1.844	1.878	1.912	1.945	1.979	2.013	2.046	2.046	2.046
11.0	1.009	1.035	1.060	1.086	1.111	1.137	1.162	1.185	1.207	1.229	1.251	1.273	1.295	1.317	1.339	1.364	1.390	1.415	1.441	1.466	1.492	1.517	1.542	1.572	1.601	1.630	1.660	1.689	1.718	1.747	1.777	1.777	1.777
12.0	0.876	0.898	0.921	0.943	0.965	0.987	1.009	1.028	1.048	1.067	1.086	1.105	1.124	1.143	1.162	1.185	1.207	1.229	1.251	1.273	1.295	1.317	1.339	1.364	1.390	1.415	1.441	1.466	1.492	1.517	1.542	1.542	1.542
13.0	0.761	0.780	0.799	0.818	0.838	0.857	0.876	0.893	0.909	0.926	0.943	0.959	0.976	0.993	1.009	1.028	1.048	1.067	1.086	1.105	1.124	1.143	1.162	1.185	1.207	1.229	1.251	1.273	1.295	1.317	1.339	1.339	1.339
14.0	0.660	0.677	0.694	0.710	0.727	0.744	0.761	0.775	0.790	0.804	0.818	0.833	0.847	0.862	0.876	0.893	0.909	0.926	0.943	0.959	0.976	0.993	1.009	1.028	1.048	1.067	1.086	1.105	1.124	1.143	1.162	1.162	1.162
15.0	0.573	0.588	0.602	0.617	0.631	0.646	0.660	0.673	0.685	0.698	0.710	0.723	0.736	0.748	0.761	0.775	0.790	0.804	0.818	0.833	0.847	0.862	0.876	0.893	0.909	0.926	0.943	0.959	0.976	0.993	1.009	1.009	1.009
16.0	0.498	0.510	0.523	0.535	0.548	0.561	0.573	0.584	0.595	0.606	0.617	0.628	0.639	0.649	0.660	0.673	0.685	0.698	0.710	0.723	0.736	0.748	0.761	0.775	0.790	0.804	0.818	0.833	0.847	0.862	0.876	0.876	0.876
17.0	0.432	0.443	0.454	0.465	0.476	0.487	0.498	0.507	0.517	0.526	0.535	0.545	0.554	0.564	0.573	0.584	0.595	0.606	0.617	0.628	0.639	0.649	0.660	0.673	0.685	0.698	0.710	0.723	0.736	0.748	0.761	0.761	0.761
18.0	0.375	0.385	0.394	0.404	0.413	0.423	0.432	0.440	0.448	0.457	0.465	0.473	0.481	0.489	0.498	0.507	0.517	0.526	0.535	0.545	0.554	0.564	0.573	0.584	0.595	0.606	0.617	0.628	0.639	0.649	0.660	0.660	0.660
19.0	0.326	0.334	0.342	0.350	0.359	0.367	0.375	0.382	0.389	0.396	0.404	0.411	0.418	0.425	0.432	0.440	0.448	0.457	0.465	0.473	0.481	0.489	0.498	0.507	0.517	0.526	0.535	0.545	0.554	0.564	0.573	0.573	0.573
20.0	0.283	0.290	0.297	0.304	0.311	0.318	0.326	0.332	0.338	0.344	0.350	0.357	0.363	0.369	0.375	0.382	0.389	0.396	0.404	0.411	0.418	0.425	0.432	0.440	0.448	0.457	0.465	0.473	0.481	0.489	0.498	0.498	0.498

LS7	MANIFOLD VACUUM (kPa)																																
Voltage	128	144	160	176	192	208	224	240	256	272	288	304	320	336	352	368	384	400*	416	432	448	464	480	496	512	528	544	560	576	592	608	624	640
4.0	2.715	2.775	2.835	2.895	2.956	3.016	3.076	3.128	3.173	3.218	3.264	3.309	3.355	3.400	3.446	3.498	3.550	3.603	3.653	3.704	3.755	3.806	3.857	3.915	3.974	4.033	4.091	4.150	4.360	4.570	4.780	4.780	4.780
5.0	2.357	2.409	2.462	2.514	2.566	2.618	2.670	2.715	2.755	2.794	2.834	2.873	2.912	2.952	2.991	3.037	3.082	3.128	3.172	3.216	3.260	3.304	3.348	3.399	3.450	3.501	3.552	3.603	3.785	3.967	4.150	4.150	4.150
6.0	2.046	2.092	2.137	2.182	2.228	2.273	2.318	2.357	2.391	2.426	2.460	2.494	2.528	2.563	2.597	2.636	2.676	2.715	2.754	2.792	2.830	2.869	2.907	2.951	2.995	3.039	3.083	3.128	3.286	3.444	3.603	3.603	3.603
7.0	1.777	1.816	1.855	1.895	1.934	1.973	2.012	2.046	2.076	2.106	2.136	2.165	2.195	2.225	2.255	2.289	2.323	2.357	2.391	2.424	2.457	2.490	2.524	2.562	2.600	2.639	2.677	2.715	2.853	2.990	3.128	3.128	3.128
8.0	1.542	1.577	1.611	1.645	1.679	1.713	1.747	1.777	1.802	1.828	1.854	1.880	1.906	1.931	1.957	1.987	2.017	2.046	2.075	2.104	2.133	2.162	2.191	2.224	2.257	2.291	2.324	2.357	2.477	2.596	2.715	2.715	2.715
9.0	1.339	1.369	1.398	1.428	1.458	1.487	1.517	1.542	1.565	1.587	1.610	1.632	1.654	1.677	1.699	1.725	1.751	1.777	1.802	1.827	1.852	1.877	1.902	1.931	1.960	1.989	2.018	2.046	2.150	2.254	2.357	2.357	2.357
10.0	1.162	1.188	1.214	1.240	1.265	1.291																											



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30517-1 & 30517-8
Fuel Injector Offset vs Battery Voltage vs VAC (continued)

GM FLOW

LS1																	
Manifold Vacuum (kPa)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
Flow Rate (lb/hr)	49.9	50.3	50.6	50.9	51.2	51.5	51.8	52.1	52.4	52.7	53.0	53.3	53.6	53.9	54.1	54.4	54.7
Scaled Flow Rate (lb/hr)	25.0	25.1	25.3	25.4	25.6	25.7	25.9	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4

LS2																	
Manifold Vacuum (kPa)	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80
Flow Rate (lb/hr)	44.7	45.4	46.0	46.7	47.4	48.0	48.7	49.3	49.9	50.6	51.2	51.8	52.4	53.0	53.6	54.1	54.7
Scaled Flow Rate (lb/hr)	22.3	22.7	23.0	23.4	23.7	24.0	24.3	24.7	25.0	25.3	25.6	25.9	26.2	26.5	26.8	27.1	27.4

COBALT																															
Manifold Vacuum (kPa)	-120	-114	-108	-101	-95	-89	-83	-76	-70	-64	-58	-45	-39	-33	-29	-20	-14	-8	-1	5	11	18	24	30	36	43	49	55	61	68	74
Flow Rate (lb/hr)	42.4	42.8	43.1	43.6	43.9	44.3	44.7	45.1	45.5	45.8	46.2	46.6	47.0	47.4	47.7	48.5	48.9	49.3	49.7	50.1	50.5	50.9	51.3	51.6	52.0	52.4	52.8	53.2	53.5	54.0	54.3

LS3																																	
Differential Pressure (kPa)	128	148	168	188	208	228	248	268	288	308	328	348	368	388	408	428	448	468	488	508	528	548	568	588	608	628	648	668	688	708	728	748	768
Flow Rate (lb/hr)	28.3	30.4	32.4	34.2	36.0	37.7	39.3	40.9	42.4	43.8	45.2	46.6	47.9	49.2	50.4	51.7	52.9	54.0	55.2	56.3	57.4	58.5	59.5	60.6	61.6	62.6	63.6	64.5	65.5	66.4	67.4	68.3	69.2
Scaled Flow Rate (lb/hr)	14.1	15.2	16.2	17.1	18.0	18.9	19.7	20.4	21.2	21.9	22.6	23.3	24.0	24.6	25.2	25.8	26.4	27.0	27.6	28.1	28.7	29.2	29.8	30.3	30.8	31.3	31.8	32.3	32.8	33.2	33.7	34.1	34.6

LS7																																	
Differential Pressure (kPa)	128	144	160	176	192	208	224	240	256	272	288	304	320	336	352	368	384	400	416	432	448	464	480	496	512	528	544	560	576	592	608	624	640
Flow Rate (lb/hr)	28.3	30.0	31.6	33.1	34.6	36.0	37.4	38.7	40.0	41.2	42.4	43.5	44.7	45.8	46.9	47.9	48.9	49.9	50.9	51.9	52.9	53.8	54.7	55.6	56.5	57.4	58.2	59.1	59.9	60.8	61.6	62.4	63.2
Scaled Flow Rate (lb/hr)	14.1	15.0	15.8	16.6	17.3	18.0	18.7	19.3	20.0	20.6	21.2	21.8	22.3	22.9	23.4	24.0	24.5	25.0	25.5	26.0	26.4	26.9	27.4	27.8	28.3	28.7	29.1	29.5	30.0	30.4	30.8	31.2	31.6

*note: If you are using a regulator with a return set at 58 psi., Populate the table with the value in the grey cells

Input Scale value IF needed	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
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*Pick which table that best fits in your ECU

GM SHORT PULSE ADDER

PW ms	0.0000	0.0608	0.1216	0.1824	0.2432	0.3040	0.3648	0.4256	0.4864	0.5472	0.6080	0.6688	0.7296	0.7904	0.8512	0.9120	0.9728	1.0336	1.0944	1.1552	1.2160	1.2768	1.3376	1.3984	1.4592	1.5200	1.5808	1.6416	1.7024	1.7632	1.8240	1.8848	1.9456	2.0064
PW Adder	0.000	0.259	0.223	0.188	0.152	0.117	0.082	0.046	0.013	-0.001	-0.016	-0.030	-0.044	-0.050	-0.054	-0.058	-0.062	-0.062	-0.063	-0.063	-0.061	-0.059	-0.057	-0.059	-0.062	-0.065	-0.068	-0.070	-0.072	-0.074	-0.070	-0.065	-0.061	-0.056

PW ms	2.0672	2.1280	2.1888	2.2496	2.3104	2.3712	2.4320	2.4928	2.5536	2.6144	2.6752	2.7360	2.7968	2.8576	2.9184	2.9792	3.0400	3.1008	3.1616	3.2224	3.2832	3.3440	3.4048	3.4656	3.5264	3.5872	3.6480	3.7088	3.7696	3.8304	3.8912	3.9520	4.0128
PW Adder	-0.054	-0.051	-0.048	-0.044	-0.041	-0.037	-0.034	-0.030	-0.027	-0.024	-0.020	-0.017	-0.013	-0.010	-0.006	-0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PW ms	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2.000	2.125	2.250	2.375	2.500	2.625	2.750	2.875	3.000	3.125	3.250	3.375	3.500	3.625	3.750	3.875	4.000
PW Adder	0.000	0.221	0.148	0.076	0.010	-0.020	-0.047	-0.056	-0.062	-0.063	-0.060	-0.057	-0.064	-0.069	-0.074	-0.066	-0.058	-0.054	-0.048	-0.041	-0.034	-0.026	-0.019	-0.012	-0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

*Most V8's

PW ms	0.000	0.100	0.300	0.400	0.500	0.600	0.800	0.900	1.000	1.100	1.300	1.400	1.500	1.600	1.800	1.900	2.000	2.100	2.300	2.400	2.500	2.600	2.800	2.900	3.000	3.100	3.300	3.400	3.500	3.600	3.800	3.900	4.000
PW Adder	0.000	0.236	0.119	0.061	0.010	-0.014	-0.051	-0.058	-0.062	-0.063	-0.058	-0.059	-0.064	-0.068	-0.072	-0.064	-0.058	-0.055	-0.045	-0.039	-0.028	-0.022	-0.005	-0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

*Cobalt Specific

SHORT PULSE LIMIT (ms)	4.000
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DEFAULT PULSEWIDTH	0.524
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*Pick which table that best fits in your ECU

GM MINIMUM PULSE

RPM	0	400	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200	5600	6000	6400	6800	7200	7600	8000
Minimum Inj. PW	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000
Minimum Inj. PW	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239	0.5239

*Pick which table that best fits in your ECU

*If you are only needing a single Minimum pulse use the grey values



FUEL INJECTOR CHARACTERIZATION
FORD INJECTOR DATA 30517-1 & 30517-8
For 2011+ applications, for older applications scroll down.

FLOW RATE	
Fuel Injector Breakpoint (lb)	0.0000075
Fuel Injector Hi Slope (lb/sec)	0.0138729
Fuel Injector Low Slope (lb/sec)	0.0164980
Fuel Injector Minimum Pulse Width (sec)	0.0004101
LIMITS	PERCENTAGE
Max Allowed Inj Duty Cycle	1.999
Max Allowed Inj Duty Cycle on Alcohol	2.000

OFFSET VS. VOLTAGE	
Battery Voltage	PW (ms)
6.0	2.7153
7.0	2.3573
8.0	2.0465
9.0	1.7766
10.0	1.5424
11.0	1.3390
12.0	1.1625
13.0	1.0092
13.5	0.9403
14.0	0.8761
14.5	0.8163
15.0	0.7606

FLOW RATE LOW MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
67	1.0232	1.0000
64	1.0000	1.0000
58	0.9520	1.0000
54	0.9186	1.0000
50	0.8838	1.0000
46	0.8478	1.0000

FLOW RATE HIGH MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
67	1.0232	1.0000
64	1.0000	1.0000
58	0.9520	1.0000
54	0.9186	1.0000
50	0.8838	1.0000
46	0.8478	1.0000

BREAKPOINT MULT		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
67	1.0232	1.0000
64	1.0000	1.0000
58	0.9520	1.0000
54	0.9186	1.0000
50	0.8838	1.0000
46	0.8478	1.0000

OFFSET MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
67	1.0232	1.0000
64	1.0000	1.0000
58	0.9520	1.0000
54	0.9186	1.0000
50	0.8838	1.0000
46	0.8478	1.0000
42	0.8101	1.0000

If you are running the factory fuel system plumbing use the Factory Multipliers.
If you are running a reuglator with a return to the tank us the Return Multipliers. Base fuel pressure must be set to 58psi.

39 PSI Fuel Systems
For 2010 and older applications below

If you are running the factory fuel system plumbing use the Factory Multipliers. If you are running a regulator with a return to the tank us the Return Multipliers. Base pressure must be set to 39psi.

FLOW RATE	
Fuel Injector Breakpoint (lb)	0.0000066
Fuel Injector Hi Slope (lb/sec)	0.0115883
Fuel Injector Low Slope (lb/sec)	0.0137811
Fuel Injector Minimum Pulse Width (sec)	0.0004101
LIMITS	PERCENTAGE
Max Allowed Inj Duty Cycle	1.999
Max Allowed Inj Duty Cycle on Alcohol	2.000

OFFSET VS. VOLTAGE	
Battery Voltage	PW (ms)
6.0	2.2503
8.0	1.7827
10.0	1.3808
11.0	1.2044
12.0	1.0445
13.0	0.9010
14.0	0.7740
15.0	0.6633

FLOW RATE LOW MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1460	1.0000
54.96	1.1113	1.0000
50.03	1.0771	1.0000
39.15	1.0000	1.0000
30.02	0.9393	1.0000
20.01	0.8704	1.0000

FLOW RATE HIGH MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1460	1.0000
54.96	1.1113	1.0000
50.03	1.0771	1.0000
39.15	1.0000	1.0000
30.02	0.9393	1.0000
20.01	0.8704	1.0000

BREAKPOINT MULT		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1460	1.0000
54.96	1.1113	1.0000
50.03	1.0771	1.0000
39.15	1.0000	1.0000
30.02	0.9393	1.0000
20.01	0.8704	1.0000

OFFSET MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1460	1.0000
54.96	1.1113	1.0000
50.03	1.0771	1.0000
39.15	1.0000	1.0000
30.02	0.9393	1.0000
20.01	0.8704	1.0000



FUEL INJECTOR CHARACTERIZATION

DODGE/CHRYSLER/JEEP INJECTOR DATA 30517-1 & 30517-8

INJECTOR PULSE WIDTH (ms)	FUEL MASS (Grams)
0.000	0.00000
0.413	0.00000
0.613	0.00302
0.813	0.00466
1.013	0.00601
1.213	0.00728
1.413	0.00850
1.613	0.00982
1.813	0.01113
2.013	0.01230
2.213	0.01351
3.213	0.01948
9.213	0.05724
49.213	0.30895

INJECTOR MIN PW	0.410
-----------------	-------

START UP SCALER	6.293
-----------------	-------

IGNITION VOLTAGE (all in ms)									
KPa	6	7	8	10	12	14	15.8	15.8	15.8
0	2.799	2.445	2.133	1.627	1.249	0.961	0.770	0.770	0.770
20	2.847	2.487	2.169	1.655	1.270	0.977	0.782	0.782	0.782
40	2.896	2.530	2.206	1.683	1.291	0.993	0.795	0.795	0.795
80	2.997	2.618	2.283	1.740	1.334	1.026	0.820	0.820	0.820
100	3.049	2.663	2.322	1.769	1.356	1.042	0.833	0.833	0.833

IGNITION VOLTAGE (all in ms)									
KPa	8	9.5	11	12	12.8	13.5	14	14.7	15.5
-80	1.993	1.629	1.335	1.169	1.060	0.963	0.902	0.821	0.746
0	2.133	1.742	1.426	1.249	1.131	1.027	0.961	0.874	0.794
40	2.206	1.802	1.474	1.291	1.168	1.061	0.993	0.903	0.820
62	2.248	1.835	1.502	1.314	1.190	1.080	1.011	0.919	0.834
84	2.291	1.870	1.529	1.338	1.211	1.099	1.029	0.935	0.849

IGNITION VOLTAGE (all in ms)									
KPa	5	6	7	8	9	10.1	12.1	14.1	15.8
250	2.824	2.462	2.152	1.879	1.642	1.424	1.095	0.847	0.685
300	2.948	2.569	2.245	1.960	1.712	1.484	1.141	0.881	0.712
400	3.212	2.799	2.445	2.133	1.862	1.614	1.239	0.955	0.770
500	3.501	3.049	2.663	2.322	2.026	1.755	1.345	1.035	0.833
550	3.655	3.183	2.779	2.423	2.114	1.830	1.402	1.078	0.867

IGNITION VOLTAGE (all in ms)									
KPa	5	6	7	8	9	10.1	12.1	14.1	15.8
130	2.549	2.223	1.944	1.698	1.485	1.289	0.994	0.770	0.625
244	2.810	2.449	2.141	1.869	1.633	1.417	1.090	0.843	0.682
400	3.212	2.799	2.445	2.133	1.862	1.614	1.239	0.955	0.770
586	3.771	3.283	2.866	2.498	2.179	1.886	1.444	1.110	0.892
660	4.020	3.499	3.054	2.662	2.321	2.008	1.536	1.179	0.947

IGNITION VOLTAGE (all in ms)									
KPa	5	5.7	6.3	7	8	10	12	14	15.8
8	3.212	2.902	2.710	2.445	2.133	1.627	1.249	0.961	0.770
80	3.429	3.097	2.892	2.608	2.283	1.740	1.334	1.026	0.820
117	3.578	3.232	3.017	2.663	2.322	1.769	1.356	1.042	0.833
150	3.655	3.301	3.082	2.779	2.423	1.830	1.402	1.078	0.867
200	3.782	3.415	3.188	2.875	2.506	2.186	1.892	1.449	1.113

*Pick which table that best matches your ECU’s pressure and voltage values



FUEL INJECTOR CHARACTERIZATION
HONDA/ACURA INJECTOR DATA 30517-1 & 30517-8

2002 AND NEWER		INJECTOR FLOW	
3.5 BAR, 350 KPa, 51 PSI. System		491	
BATTERY OFFSET			
Voltage		Offset:	
0		2.598	
6		2.572	
8		1.958	
10		1.476	
12		1.112	
14		0.831	
16		0.625	
24		0.189	
AFM FUEL			
Air Mass (mg)		51 PSI System	
0		0.000	
70		1.646	
100		1.992	
120		2.223	
200		3.146	
300		4.300	
400		5.454	
750		9.493	
1000		12.378	
1250		15.263	
1500		18.148	
1750		21.033	
2000		23.918	
2250		26.802	
2500		29.687	
2750		32.572	
FUEL ECONOMY			
Inj. Flow for FE:		487	
Inj. Flow for Dash:		487	

2001 AND OLDER		INJECTOR FLOW	
3.0 BAR, 300 KPa, 43.5 PSI. System		456	
BATTERY OFFSET			
Voltage		Offset:	
0		2.486	
6		2.461	
8		1.873	
10		1.412	
12		1.064	
14		0.795	
16		0.604	
24		0.180	
AFM FUEL			
Air Mass (mg)		43.5 PSI System	
0		0.000	
70		1.671	
100		2.044	
120		2.292	
200		3.286	
300		4.527	
400		5.769	
750		10.115	
1000		13.219	
1250		16.324	
1500		19.428	
1750		22.532	
2000		25.637	
2250		28.741	
2500		31.845	
2750		34.950	
FUEL ECONOMY			
Inj. Flow for FE:		489	
Inj. Flow for Dash:		489	



FUEL INJECTOR CHARACTERIZATION
MAZDA INJECTOR DATA 30517-1 & 30517-8

INJECTOR BASE PW

7.117

INJECTOR MINIMUM PW

0.524

INJECTOR FLOW RATE

469.5

INJECTOR SCALING GLOBAL

1.00

INJECTOR OPENING TIME

Pressure (kPa)		-15.86	-7.866	0	7.866	15.86	23.73	31.73	39.6	47.46	55.46	63.33	71.19	79.19	87.06	95.06	102.9
Voltage	6.5	2.495	2.512	2.530	2.548	2.566	2.584	2.602	2.620	2.638	2.657	2.676	2.694	2.713	2.732	2.752	2.771
	7.75	2.091	2.105	2.120	2.135	2.150	2.165	2.180	2.196	2.211	2.227	2.242	2.258	2.274	2.290	2.306	2.322
	9	1.752	1.764	1.777	1.789	1.802	1.814	1.827	1.840	1.853	1.866	1.879	1.892	1.905	1.919	1.932	1.946
	10.25	1.468	1.479	1.489	1.499	1.510	1.520	1.531	1.542	1.553	1.564	1.575	1.585	1.597	1.608	1.619	1.631
	11.5	1.230	1.239	1.248	1.256	1.265	1.274	1.283	1.292	1.301	1.310	1.319	1.329	1.338	1.347	1.357	1.366
	12.75	1.031	1.038	1.046	1.053	1.060	1.068	1.075	1.083	1.090	1.098	1.106	1.113	1.121	1.129	1.137	1.145
	14	0.864	0.870	0.876	0.882	0.889	0.895	0.901	0.907	0.914	0.920	0.927	0.933	0.940	0.946	0.953	0.960
	15.25	0.724	0.729	0.734	0.739	0.745	0.750	0.755	0.760	0.766	0.771	0.776	0.782	0.787	0.793	0.799	0.804
	16.5	0.607	0.611	0.615	0.620	0.624	0.628	0.633	0.637	0.642	0.646	0.651	0.655	0.660	0.664	0.669	0.674

VOLUMETRIC EFFICIENCY LOAD MULTIPLIER

RPM	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047	1.047
0.0625	1.013	1.013	1.013	1.013	1.013	1.013	1.013	1.013	1.013	1.013	1.013	1.013	1.013	1.013	1.013
0.125	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.1875	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.25	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.3125	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.375	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.4375	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.5625	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.625	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.6875	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.75	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.8125	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.875	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.9375	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



FUEL INJECTOR CHARACTERIZATION
MITSUBISHI INJECTOR DATA 30517-1 & 30517-8
43.5 PSI / 3 BAR / 300 KPa

INJECTOR SIZE (cc/min)	456
------------------------	-----

BATTERY VOLTAGE LATENCY COMPENSATION							
Voltage	4.69	7.99	9.97	12.02	14.00	15.98	18.77
Latency	2.991	1.876	1.418	1.061	0.802	0.606	0.409



FUEL INJECTOR CHARACTERIZATION
MERCEDES/BOSCH INJECTOR DATA 30517-1 & 30517-8

INJECTOR CONSTANT

MS/%

0.07235

OFFSET VS. VOLTAGE

Volts

7.5

10.6

12.1

15.1

16.6

ms

2.185

1.408

1.153

0.753

0.608

INJECTOR FLOW RATE FACTOR

250

300

350

400

450

500

550

600

650

700

750

1.265

1.155

1.069

1.000

0.943

0.894

0.853

0.816

0.784

0.756

0.730

INJECTOR PULSE MULT

1

1.3

1.6

1.9

2.2

2.5

3

3.5

4

5

6

8

10

12

14

16

520

0.9382

0.9554

0.9574

0.9662

0.9771

0.9866

0.9982

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

760

0.9382

0.9554

0.9574

0.9662

0.9771

0.9866

0.9982

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1.0000

1.0000

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1000

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0.9554

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1.0000



FUEL INJECTOR CHARACTERIZATION
NISSAN/INFINITI INJECTOR DATA 30517-1 & 30517-8

INJECTOR LATENCY	
Injector Scalar	0.876
Injector Offset	-0.119
MIN. PULSEWIDTH	524 µs
INJECTOR SCALAR	
350 KPa (cc/min)	490.6
300 KPa (cc/min)	455.9
NON-LINEAR INJ. COMP. MAX IPW	
3.000 ms	

DIFFERENTIAL FUEL PRESSURE DELTA PERCENT (Cobb/EcuTek)								
*Note Use this table if using stock style fuel system								
MAP	-40	-30	-20	-10	0	10	20	30
Comp %	118	114	110	105	100	95	89	84
*Note If using a vacuum referenced regulator use this table								
MAP	-40	-30	-20	-10	0	10	20	30
Comp %	100	100	100	100	100	100	100	100

PRIMARY INJECTOR BATTERY OFFSET (Cobb/EcuTek)								
Battery voltage								
psi	9	10	11	12	13	14	15	16
20.0	1.409	1.224	1.062	0.922	0.801	0.695	0.603	0.524
25.2	1.455	1.263	1.097	0.952	0.827	0.718	0.623	0.541
31.6	1.513	1.313	1.140	0.990	0.859	0.746	0.648	0.562
39.9	1.591	1.381	1.199	1.041	0.904	0.785	0.681	0.591
50.2	1.694	1.471	1.277	1.108	0.962	0.835	0.725	0.630
63.1	1.832	1.591	1.381	1.199	1.041	0.904	0.785	0.681
79.5	2.025	1.758	1.526	1.325	1.150	0.999	0.867	0.753
100.0	2.294	1.991	1.729	1.501	1.303	1.131	0.982	0.852

INJECTOR LOW PW COMPENSATION (Cobb/EcuTek)																
Effective Pulse Width (ms)																
psi	0.08	0.27	0.47	0.66	0.86	1.05	1.25	1.44	1.64	1.83	2.03	2.22	2.42	2.61	2.81	3.00
20	101	95	94	94	95	96	96	96	96	97	98	98	99	99	99	100
25	101	95	94	94	95	96	96	96	96	97	98	98	99	99	99	100
32	101	95	94	94	95	96	96	96	96	97	98	98	99	99	99	100
40	101	95	94	94	95	96	96	96	96	97	98	98	99	99	99	100
50	101	95	94	94	95	96	96	96	96	97	98	98	99	99	99	100
63	101	95	94	94	95	96	96	96	96	97	98	98	99	99	99	100
79	101	95	94	94	95	96	96	96	96	97	98	98	99	99	99	100
100	101	95	94	94	95	96	96	96	96	97	98	98	99	99	99	100



FUEL INJECTOR CHARACTERIZATION
SUBARU INJECTOR DATA 30517-1 & 30517-8

INJECTOR CONSTANT
6332.8 μ s

FLOW RATE
5.49 g/s

INJ. PULSEWIDTH LIMIT
0.598 ms

FUEL INJECTOR TRIM (Max Small IPW)
3.000 ms

FUEL INJECTOR TRIM (Max RPM, Small IPW)
10000 rpm

FUEL INJECTOR LATENCY						
Voltage		6.05	9	11.5	14	16.5
MAP (psi.)	-19.34	2.06	1.45	1.02	0.71	0.50
	0	2.32	1.63	1.14	0.80	0.56
	19.34	2.61	1.83	1.28	0.90	0.63

02-05 WRX SPECIFIC						
Voltage		6.05	9	11.5	14	16.5
MAP (psi.)	-19.34	1.67	1.26	0.95	0.71	0.54
	0	1.87	1.41	1.06	0.80	0.60
	19.34	2.11	1.59	1.20	0.90	0.68

FUEL INJECTOR TRIM (Small IPW) 05-05 WRX SPECIFIC						
PW	0.275	0.820	1.365	1.910	2.455	3.000
%	-0.013	-0.063	-0.067	-0.057	-0.032	-0.005

FUEL INJECTOR TRIM (Small IPW)								
PW	0.275	0.665	1.054	1.443	1.832	2.222	2.611	3.000
%	-2.22	-6.42	-4.56	-4.26	-3.02	-1.90	-0.93	-0.18

VEHICLES WITH GDI AND PORT INJECTION USE BELOW

Note* This is for vehicles like the FRS/BRZ/GT86/GR86

INJECTOR SCALING
523 cc/min

LOW PW INJ. COMP	
0.598	0.9778
0.941	0.9358
1.284	0.9544
1.627	0.9574
1.971	0.9698
2.314	0.9810
2.657	0.9907
3.000	0.9982

INJ. MIN. OPEN TIME
0.5980 ms

PFI MANIFOLD RELATIVE PRESSURE COMP.		
Manifold Relative Pres. (BAR)	-0.933	0.876
	-0.800	0.894
	-0.667	0.913
	-0.533	0.931
	-0.400	0.949
	-0.267	0.966
	-0.133	0.983
	0.000	1.000
	0.133	1.016
	0.267	1.033
	0.400	1.049
	0.533	1.065
	0.667	1.080
	0.800	1.095
	0.933	1.111
	1.067	1.125

LOW PW COMP MAX IPW
3.000 ms

LOW PW COMP MAX RPM
10000 rpm

INJECTOR OPENING TIME						
Voltage:		8	10	12	14	16
MAP (psi.)	-1000	2.046	1.542	1.162	0.876	0.660
	0	2.046	1.542	1.162	0.876	0.660
	1000	2.046	1.542	1.162	0.876	0.660



FUEL INJECTOR CHARACTERIZATION
AEM INJECTOR DATA 30517-1 & 30517-8

AEM INFINITY	Injector Flow Rate (cc/min)								
Pressure	20	30	40	50	60	70	80	90	100
Flow	308	378	437	489	536	579	614	652	688

INJECTOR OFFSET (ms)		Battery (Volts)			
		10.0	12.0	14.0	16.0
Inj Pressure (psig)	100.0	1.94	1.46	1.10	0.83
	90.0	1.85	1.39	1.05	0.79
	80.0	1.75	1.32	1.00	0.75
	70.0	1.66	1.25	0.94	0.71
	60.0	1.57	1.18	0.89	0.67
	50.0	1.47	1.11	0.84	0.63
	40.0	1.38	1.04	0.78	0.59
	30.0	1.28	0.97	0.73	0.55
	20.0	1.19	0.90	0.68	0.51

AEM EMS, SERIES 1 AND 2	Battery Offset Primary										
Battery Volts	6	7	8	9	10	11	12	13	14	15	16
Batt Offset	2.49	2.18	1.87	1.64	1.41	1.24	1.06	0.93	0.80	0.70	0.60

Inj Size (cc's/min)	456
Injector Min (uSec)	524
Injector Duty Max	95%

* EMS, Series 1 And 2 Data Formated At 3BAR (43.5 PSI)



FUEL INJECTOR CHARACTERIZATION
ECU MASTERS INJECTOR DATA 30517-1 & 30517-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR SIZE (cc/min)	456
------------------------	-----

FUELING INJECTORS CAL (Battery Offset)												
Volts	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
Modifier	2.326	2.076	1.843	1.627	1.427	1.245	1.080	0.932	0.800	0.686	0.588	0.508

58 PSI / 4 BAR / 400 kPa

INJECTOR SIZE (cc/min)	523
------------------------	-----

FUELING INJECTORS CAL (Battery Offset)												
Volts	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
Modifier	2.541	2.268	2.013	1.777	1.559	1.360	1.180	1.018	0.874	0.749	0.643	0.555



FUEL INJECTOR CHARACTERIZATION
FAST XFI 2.0 INJECTOR DATA 30517-1 & 30517-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR FLOW RATE (lbs/hr)					43.5			
INJECTOR OPENING OFFSET VS BATTERY VOLTAGE								
Volts	8	9	10	11	12	13	14	16
Offset (ms)	1.84	1.63	1.43	1.25	1.08	0.93	0.8	0.59

58 PSI / 4 BAR / 400 kPa

INJECTOR FLOW RATE (lbs/hr)					50			
INJECTOR OPENING OFFSET VS BATTERY VOLTAGE								
Volts	8	9	10	11	12	13	14	16
Offset (ms)	2.2	1.94	1.7	1.49	1.29	1.11	0.96	0.7

FAST XFI SPORTSMAN & STREET INJECTOR DATA

43.5 PSI / 3 BAR / 300 kPa	
Injector Flow Rate (lbs/hr)	43.5
Injector Opening Tims (ms)	0.8

58 PSI / 4 BAR / 400 kPa	
Injector Flow Rate (lbs/hr)	50
Injector Opening Tims (ms)	1.0



FUEL INJECTOR CHARACTERIZATION
HALTECH DATA 30517-1 & 30517-8

HALTECH ELITE AND NEXUS

DEAD TIME TABLE				
Volts\PSI	29.000	43.500	58.000	72.500
16.0	0.531	0.588	0.643	0.702
14.0	0.722	0.800	0.874	0.955
12.0	0.974	1.080	1.180	1.289
10.0	1.287	1.427	1.559	1.703
8.0	1.662	1.843	2.013	2.199
6.0	2.098	2.326	2.541	2.776

INJECTOR FLOW TABLE				
PSI	29.0	43.5	58.0	72.5
Flow(cc)	392	456	523	585

SHORT PULSE WIDTH ADDER (ms)																															
0.000	0.100	0.200	0.300	0.400	0.500	0.600	0.700	0.800	0.900	1.000	1.100	1.200	1.300	1.400	1.500	1.600	1.700	1.800	1.900	2.000	2.100	2.200	2.300	2.400	2.500	2.600	2.700	2.800	2.900	3.000	3.100
0.000	0.204	0.178	0.119	0.062	0.010	-0.014	-0.036	-0.051	-0.057	-0.062	-0.063	-0.061	-0.059	-0.059	-0.064	-0.068	-0.069	-0.071	-0.065	-0.058	-0.055	-0.050	-0.045	-0.039	-0.034	-0.026	-0.022	-0.017	-0.011	-0.005	-0.001

HALTECH SPORT AND PLATINUM
43.5 PSI / 3 BAR / 300 kPa

INJ FLOW RATE (cc/min)	456
------------------------	-----

Voltage	8.300	8.500	8.800	9.000	9.300	9.500	9.800	10.000	10.300	10.500	10.800	11.000	11.300	11.500	11.800	12.000	12.300	12.500	12.800	13.000	13.300	13.500	13.800	14.000	14.300	14.500	14.800	15.000	15.300	15.500	15.800	16.000
Offset ms	1.812	1.750	1.688	1.626	1.573	1.519	1.466	1.412	1.365	1.319	1.272	1.226	1.185	1.145	1.105	1.064	1.029	0.994	0.959	0.924	0.893	0.863	0.832	0.802	0.776	0.749	0.723	0.696	0.673	0.650	0.627	0.604

58 PSI / 4 BAR / 400 kPa

INJ FLOW RATE (cc/min)	523
------------------------	-----

Voltage	8.300	8.500	8.800	9.000	9.300	9.500	9.800	10.000	10.300	10.500	10.800	11.000	11.300	11.500	11.800	12.000	12.300	12.500	12.800	13.000	13.300	13.500	13.800	14.000	14.300	14.500	14.800	15.000	15.300	15.500	15.800	16.000
Offset ms	1.979	1.912	1.844	1.777	1.718	1.660	1.601	1.542	1.492	1.441	1.390	1.339	1.295	1.251	1.207	1.162	1.124	1.086	1.048	1.009	0.976	0.943	0.909	0.876	0.847	0.818	0.790	0.761	0.736	0.710	0.685	0.660



FUEL INJECTOR CHARACTERIZATION
HOLLEY TERMINATOR/DOMINATOR INJECTOR DATA 30517-1 & 30517-8

43.5 PSI / 3 BAR / 300 kPa

RATED FLOW PER INJECTOR (lb/hr)		43.54		INJECTOR TYPE				High Impedance		MIN INJECTOR OPENING TIME				0.524		
INJECTOR OFF TIME																
Voltage	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4	15.2	16.0	16.8	17.6	18.4	19.2	20.0
Off Time	1.87	1.67	1.49	1.33	1.19	1.06	0.95	0.85	0.76	0.68	0.60	0.54	0.48	0.43	0.38	0.34

58 PSI / 4 BAR / 400 kPa

RATED FLOW PER INJECTOR (lb/hr)		49.95				INJECTOR TYPE				High Impedance				MIN INJECTOR OPENING TIME (ms)				0.524	
INJECTOR OFF TIME																			
Voltage	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4	15.2	16.0	16.8	17.6	18.4	19.2	20.0			
Off Time	2.05	1.83	1.63	1.46	1.30	1.16	1.04	0.93	0.83	0.74	0.66	0.59	0.53	0.47	0.42	0.38			



FUEL INJECTOR CHARACTERIZATION
LINK ECU INJECTOR DATA 30517-1 & 30517-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)										456					MINIMUM PULSE WIDTH (ms)										0.524								
INJECTOR DEAD TIME (ms)																																	
Voltage	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																	
Dead Time	2.076	1.843	1.627	1.427	1.245	1.080	0.932	0.800	0.686	0.588	0.508	0.444	0.398	0.368	0.356	0.345																	
SHORT PULSE WIDTH ADDER (ms)																																	
PulseWidth	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2.000	2.125	2.250	2.375	2.500	2.625	2.750	2.875	3.000	3.125	3.250	3.375	3.500	3.625	3.750	3.875	4.000
Modifier	0.000	0.221	0.148	0.076	0.010	-0.020	-0.047	-0.056	-0.062	-0.063	-0.060	-0.057	-0.064	-0.069	-0.074	-0.066	-0.058	-0.054	-0.048	-0.041	-0.034	-0.026	-0.019	-0.012	-0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

58 PSI / 4 BAR / 400 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)										523					MINIMUM PULSE WIDTH (ms)										0.524								
INJECTOR DEAD TIME (ms)																																	
Voltage	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																	
Dead Time	2.268	2.013	1.777	1.559	1.360	1.180	1.018	0.874	0.749	0.643	0.555	0.486	0.435	0.403	0.389	0.377																	
SHORT PULSE WIDTH ADDER (ms)																																	
PulseWidth	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2.000	2.125	2.250	2.375	2.500	2.625	2.750	2.875	3.000	3.125	3.250	3.375	3.500	3.625	3.750	3.875	4.000
Modifier	0.000	0.221	0.148	0.076	0.010	-0.020	-0.047	-0.056	-0.062	-0.063	-0.060	-0.057	-0.064	-0.069	-0.074	-0.066	-0.058	-0.054	-0.048	-0.041	-0.034	-0.026	-0.019	-0.012	-0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



FUEL INJECTOR CHARACTERIZATION
MEGASQUIRT/TUNERSTUDIO INJECTOR DATA 30517-1 & 30517-8

You may input one or both curves, but only select the one that matches your base fuel system spressure.
Injector Parameters should be set to SAME

43.5 PSI / 3 BAR / 300 kPa

INJECTOR SIZE EACH (cc)		456
BATTERY OFFSET		
Curve 1		
7.2		209.8
9.6		149.4
12.0		106.4
14.4		75.8
16.8		54.0
19.2		38.5
BANK 1 Dead-Time @ 100%(ms)		1.000

58 PSI / 4 BAR / 400 kPa

INJECTOR SIZE EACH (cc)		523
BATTERY OFFSET		
Curve 2		
7.2		229.2
9.6		163.2
12.0		116.2
14.4		82.8
16.8		59.0
19.2		42.0
BANK 1 Dead-Time @ 100%(ms)		1.000

INJECTOR SMALL PULSEWIDTHS						
New (ms)	0.000	0.585	0.888	1.241	1.579	2.000
Original (ms)	0.000	0.598	0.948	1.299	1.649	2.000

USE BELOW IF USING A PNP ECU

43.5 PSI / 3 BAR / 300 kPa

BATTERY OFFSET	
Voltage	Offset (ms)
6.0	2.326
8.0	1.843
10.0	1.427
12.0	1.080
14.0	0.800
16.0	0.588

58 PSI / 4 BAR / 400 kPa

BATTERY OFFSET	
Voltage	Offset (ms)
6.0	2.541
8.0	2.013
10.0	1.559
12.0	1.180
14.0	0.874
16.0	0.643



FUEL INJECTOR CHARACTERIZATION
EMTRON INJECTOR DATA 30517-1 & 30517-8

REF INJECTOR SIZE (Primary)	
Ref injector size (300 kPa)	456 cc/min
Ref injector size (400 kPa)	523 cc/min
Ref injector size (500 kPa)	585 cc/min

INJECTOR DEADTIME TABLE (ms)							
Voltage		6.0	8.0	10.0	12.0	14.0	16.0
Fuel Pressure 1 Diff (kPa)	300.0	2.326	1.873	1.412	1.064	0.802	0.604
	310.2	2.346	1.889	1.424	1.073	0.809	0.610
	344.7	2.424	1.952	1.471	1.109	0.836	0.630
	379.2	2.501	2.014	1.518	1.144	0.862	0.650
	413.7	2.579	2.077	1.565	1.180	0.889	0.670
	448.2	2.656	2.139	1.612	1.215	0.916	0.690
	482.7	2.734	2.202	1.659	1.251	0.943	0.710
	517.2	2.811	2.264	1.706	1.286	0.969	0.731
	551.7	2.889	2.326	1.753	1.322	0.996	0.751
	587.2	2.969	2.391	1.802	1.358	1.024	0.771
	620.7	3.044	2.451	1.848	1.393	1.050	0.791

INJECTOR LINEARISATION TABLE (ms)															
0.000	0.125	0.250	0.375	0.500	0.750	1.000	1.250	1.500	1.750	2.000	2.250	2.500	2.750	3.000	3.250
0.000	0.221	0.148	0.076	0.010	-0.047	-0.062	-0.060	-0.064	-0.074	-0.058	-0.048	-0.034	-0.019	-0.005	0.000



FUEL INJECTOR CHARACTERIZATION
MAXX ECU INJECTOR DATA 30517-1 & 30517-8

43.5 PSI / 3 BAR / 300 KPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)	456
MINIMUM PULSE WIDTH (ms)	0.524

INJECTOR DEAD TIME (ms)						
Voltage	8	10	12	14	16	18
Dead Time	1.873	1.412	1.064	0.802	0.604	0.444

SHORT PULSE WIDTH ADDER (ms)																													
Modifier	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2	2.125	2.250	2.375	2.500	2.625	2.75	2.875	3.000	3.125	3.250	3.375	3.5
Pulse Width	0.000	0.221	0.148	0.076	0.010	-0.020	-0.047	-0.056	-0.062	-0.063	-0.060	-0.057	-0.064	-0.069	-0.074	-0.066	-0.058	-0.054	-0.048	-0.041	-0.034	-0.026	-0.019	-0.012	-0.005	0.000	0.000	0.000	0.000

58 PSI / 4 BAR / 400 KPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)	523
MINIMUM PULSE WIDTH (ms)	0.524

INJECTOR DEAD TIME (ms)						
Voltage	8	10	12	14	16	18
Dead Time	2.046	1.542	1.162	0.876	0.660	0.486

SHORT PULSE WIDTH ADDER (MS)																													
Modiyer	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2	2.125	2.250	2.375	2.500	2.625	2.75	2.875	3.000	3.125	3.250	3.375	3.5
Pulse Width	0.000	0.221	0.148	0.076	0.010	-0.020	-0.047	-0.056	-0.062	-0.063	-0.060	-0.057	-0.064	-0.069	-0.074	-0.066	-0.058	-0.054	-0.048	-0.041	-0.034	-0.026	-0.019	-0.012	-0.005	0.000	0.000	0.000	0.000



FUEL INJECTOR CHARACTERIZATION
MOTEC INJECTOR DATA 30517-1 & 30517-8

RESISTANCE (Ω)	12.00 Ohm
PEAK CURRENT	4.00 Amp
HOLD CURRENT	0.30 Amp
PEAK TIME	7.00 ms
OFF TIME	Not Available
PIN DRIVE	Saturated
MINIMUM VOLUME	1.00 µl
REF FLOW (300 kPa)	7.91 ml/s
REF FLOW (400 kPa)	9.20 ml/s
REF FLOW (500 kPa)	10.28 ml/s
REF FLOW (600 kPa)	11.18 ml/s

Pulse widths (ms), depended on voltage (V), fuel differential pressure (horizontal, kPa) and fuel volume (vertical, µl)

8 VOLT

M1	v2	Fuel Pressure Differential		
Body	ms	Fuel Cylinder 1 Output Pulse Volume		
Cols	dkPa	Fuel Cylinder 1 Output Pulse Volume		
Rows	ul	Fuel Cylinder 1 Output Pulse Volume		
	300	400	500	600
1.00	2.569	2.857	3.270	3.936
2.00	2.632	2.927	3.362	3.993
3.00	2.670	2.967	3.396	4.011
4.00	2.764	2.993	3.441	4.067
5.00	2.858	3.041	3.451	4.074
6.00	2.961	3.130	3.462	4.081
7.00	3.078	3.250	3.568	4.088
8.00	3.202	3.359	3.684	4.190
9.00	3.330	3.466	3.785	4.305
10.00	3.458	3.574	3.886	4.394
11.00	3.586	3.685	3.986	4.487
12.00	3.715	3.795	4.087	4.589
13.00	3.844	3.906	4.189	4.690
14.00	3.972	4.017	4.291	4.791
15.00	4.102	4.127	4.393	4.887
16.00	4.231	4.238	4.495	4.979
17.00	4.363	4.352	4.599	5.071
18.00	4.495	4.467	4.703	5.163
19.00	4.627	4.582	4.807	5.261
20.00	4.760	4.697	4.911	5.370

10 VOLT

M1	v2	Fuel Pressure Differential		
Body	ms	Fuel Cylinder 1 Output Pulse Volume		
Cols	dkPa	Fuel Cylinder 1 Output Pulse Volume		
Rows	ul	Fuel Cylinder 1 Output Pulse Volume		
	300	400	500	600
1.00	1.826	1.964	2.116	2.287
2.00	1.878	2.013	2.173	2.353
3.00	1.914	2.054	2.213	2.397
4.00	1.986	2.090	2.234	2.415
5.00	2.105	2.159	2.251	2.433
6.00	2.218	2.259	2.350	2.465
7.00	2.340	2.369	2.448	2.556
8.00	2.464	2.470	2.541	2.650
9.00	2.589	2.572	2.634	2.740
10.00	2.714	2.674	2.730	2.829
11.00	2.839	2.787	2.826	2.918
12.00	2.964	2.901	2.922	3.008
13.00	3.093	3.015	3.026	3.100
14.00	3.224	3.127	3.129	3.192
15.00	3.354	3.240	3.232	3.283
16.00	3.483	3.352	3.335	3.373
17.00	3.615	3.464	3.439	3.463
18.00	3.746	3.577	3.544	3.554
19.00	3.878	3.690	3.648	3.660
20.00	4.010	3.802	3.753	3.772

12 VOLT

M1	v2	Fuel Pressure Differential		
Body	ms	Fuel Cylinder 1 Output Pulse Volume		
Cols	dkPa	Fuel Cylinder 1 Output Pulse Volume		
Rows	ul	Fuel Cylinder 1 Output Pulse Volume		
	300	400	500	600
1.00	1.441	1.526	1.618	1.709
2.00	1.482	1.565	1.663	1.757
3.00	1.516	1.597	1.696	1.790
4.00	1.559	1.620	1.717	1.810
5.00	1.737	1.724	1.736	1.835
6.00	1.830	1.825	1.853	1.888
7.00	1.947	1.921	1.934	1.982
8.00	2.069	2.025	2.032	2.073
9.00	2.194	2.128	2.132	2.155
10.00	2.318	2.232	2.226	2.237
11.00	2.443	2.349	2.319	2.325
12.00	2.567	2.466	2.413	2.414
13.00	2.700	2.576	2.512	2.502
14.00	2.833	2.685	2.612	2.591
15.00	2.962	2.795	2.711	2.682
16.00	3.090	2.904	2.811	2.773
17.00	3.221	3.019	2.916	2.865
18.00	3.352	3.133	3.023	2.956
19.00	3.483	3.246	3.131	3.063
20.00	3.614	3.360	3.240	3.174



FUEL INJECTOR CHARACTERIZATION
MOTEC INJECTOR DATA 30517-1 & 30517-8
(continued)

14 VOLT

M1	v2			
Body	ms	Fuel Pressure Differential		
Cols	dkPa	Fuel Cylinder 1 Output Pulse Volume		
Rows	ul			
	300	400	500	600
1.00	1.196	1.255	1.323	1.391
2.00	1.229	1.290	1.360	1.436
3.00	1.253	1.322	1.392	1.464
4.00	1.322	1.340	1.410	1.482
5.00	1.460	1.451	1.434	1.509
6.00	1.578	1.546	1.553	1.585
7.00	1.696	1.640	1.633	1.666
8.00	1.815	1.745	1.730	1.747
9.00	1.940	1.851	1.829	1.831
10.00	2.066	1.957	1.923	1.915
11.00	2.193	2.071	2.018	2.003
12.00	2.319	2.186	2.112	2.091
13.00	2.451	2.295	2.211	2.179
14.00	2.582	2.405	2.310	2.267
15.00	2.710	2.514	2.409	2.356
16.00	2.836	2.624	2.508	2.446
17.00	2.964	2.737	2.610	2.535
18.00	3.103	2.850	2.713	2.625
19.00	3.245	2.963	2.815	2.727
20.00	3.385	3.073	2.918	2.824

16 VOLT

M1	v2			
Body	ms	Fuel Pressure Differential		
Cols	dkPa	Fuel Cylinder 1 Output Pulse Volume		
Rows	ul			
	300	400	500	600
1.00	1.021	1.067	1.124	1.220
2.00	1.079	1.133	1.182	1.240
3.00	1.092	1.140	1.193	1.245
4.00	1.186	1.147	1.216	1.250
5.00	1.285	1.256	1.271	1.290
6.00	1.399	1.355	1.357	1.347
7.00	1.507	1.448	1.422	1.425
8.00	1.626	1.553	1.513	1.509
9.00	1.748	1.656	1.611	1.590
10.00	1.882	1.759	1.699	1.676
11.00	2.007	1.875	1.794	1.757
12.00	2.131	1.986	1.894	1.850
13.00	2.271	2.092	1.998	1.941
14.00	2.411	2.203	2.097	2.036
15.00	2.533	2.320	2.196	2.124
16.00	2.657	2.439	2.290	2.218
17.00	2.782	2.547	2.394	2.306
18.00	2.908	2.656	2.513	2.400
19.00	3.034	2.763	2.615	2.506
20.00	3.161	2.871	2.707	2.599



FUEL INJECTOR CHARACTERIZATION
MOTEC INJECTOR DATA 30517-1 & 30517-8
(continued)

Pulse widths (ms), depended on voltage (V), fuel differential pressure (horizontal, kPa) and fuel volume (vertical, µl)

300 kPa

	8	10	12	14	15
1.00	2.569	1.826	1.441	1.196	1.021
2.00	2.632	1.878	1.482	1.229	1.079
3.00	2.670	1.914	1.516	1.253	1.092
4.00	2.764	1.986	1.559	1.322	1.186
5.00	2.858	2.105	1.737	1.460	1.285
6.00	2.961	2.218	1.830	1.578	1.399
7.00	3.078	2.340	1.947	1.696	1.507
8.00	3.202	2.464	2.069	1.815	1.626
9.00	3.330	2.589	2.194	1.940	1.748
10.00	3.458	2.714	2.318	2.066	1.882
11.00	3.586	2.839	2.443	2.193	2.007
12.00	3.715	2.964	2.567	2.319	2.131
13.00	3.844	3.093	2.700	2.451	2.271
14.00	3.972	3.224	2.833	2.582	2.411
15.00	4.102	3.354	2.962	2.710	2.533
16.00	4.231	3.483	3.090	2.836	2.657
17.00	4.363	3.615	3.221	2.964	2.782
18.00	4.495	3.746	3.352	3.103	2.908
19.00	4.627	3.878	3.483	3.245	3.034
20.00	4.760	4.010	3.614	3.385	3.161

400 kPa

	8	10	12	14	15
1.00	2.857	1.964	1.526	1.255	1.067
2.00	2.927	2.013	1.565	1.290	1.133
3.00	2.967	2.054	1.597	1.322	1.140
4.00	2.993	2.090	1.620	1.340	1.147
5.00	3.041	2.159	1.724	1.451	1.256
6.00	3.130	2.259	1.825	1.546	1.355
7.00	3.250	2.369	1.921	1.640	1.448
8.00	3.359	2.470	2.025	1.745	1.553
9.00	3.466	2.572	2.128	1.851	1.656
10.00	3.574	2.674	2.232	1.957	1.759
11.00	3.685	2.787	2.349	2.071	1.875
12.00	3.795	2.901	2.466	2.186	1.986
13.00	3.906	3.015	2.576	2.295	2.092
14.00	4.017	3.127	2.685	2.405	2.203
15.00	4.127	3.240	2.795	2.514	2.320
16.00	4.238	3.352	2.904	2.624	2.439
17.00	4.352	3.464	3.019	2.737	2.547
18.00	4.467	3.577	3.133	2.850	2.656
19.00	4.582	3.690	3.246	2.963	2.763
20.00	4.697	3.802	3.360	3.073	2.871



FUEL INJECTOR CHARACTERIZATION
MOTEC INJECTOR DATA 30517-1 & 30517-8
(continued)

500 kPa

	8	10	12	14	15
1.00	3.270	2.116	1.618	1.323	1.124
2.00	3.362	2.173	1.663	1.360	1.182
3.00	3.396	2.213	1.696	1.392	1.193
4.00	3.441	2.234	1.717	1.410	1.216
5.00	3.451	2.251	1.736	1.434	1.271
6.00	3.462	2.350	1.853	1.553	1.357
7.00	3.568	2.448	1.934	1.633	1.422
8.00	3.684	2.541	2.032	1.730	1.513
9.00	3.785	2.634	2.132	1.829	1.611
10.00	3.886	2.730	2.226	1.923	1.699
11.00	3.986	2.826	2.319	2.018	1.794
12.00	4.087	2.922	2.413	2.112	1.894
13.00	4.189	3.026	2.512	2.211	1.998
14.00	4.291	3.129	2.612	2.310	2.097
15.00	4.393	3.232	2.711	2.409	2.196
16.00	4.495	3.335	2.811	2.508	2.290
17.00	4.599	3.439	2.916	2.610	2.394
18.00	4.703	3.544	3.023	2.713	2.513
19.00	4.807	3.648	3.131	2.815	2.615
20.00	4.911	3.753	3.240	2.918	2.707

600 kPa

	8	10	12	14	15
1.00	3.936	2.287	1.709	1.391	1.220
2.00	3.993	2.353	1.757	1.436	1.240
3.00	4.011	2.397	1.790	1.464	1.245
4.00	4.067	2.415	1.810	1.482	1.250
5.00	4.074	2.433	1.835	1.509	1.290
6.00	4.081	2.465	1.888	1.585	1.347
7.00	4.088	2.556	1.982	1.666	1.425
8.00	4.190	2.650	2.073	1.747	1.509
9.00	4.305	2.740	2.155	1.831	1.590
10.00	4.394	2.829	2.237	1.915	1.676
11.00	4.487	2.918	2.325	2.003	1.757
12.00	4.589	3.008	2.414	2.091	1.850
13.00	4.690	3.100	2.502	2.179	1.941
14.00	4.791	3.192	2.591	2.267	2.036
15.00	4.887	3.283	2.682	2.356	2.124
16.00	4.979	3.373	2.773	2.446	2.218
17.00	5.071	3.463	2.865	2.535	2.306
18.00	5.163	3.554	2.956	2.625	2.400
19.00	5.261	3.660	3.063	2.727	2.506
20.00	5.370	3.772	3.174	2.824	2.599

All MoTec data supplied is provided via from MoTec from their in-house testing.



FUEL INJECTOR CHARACTERIZATION
FUELTECH INJECTOR DATA 30517-1 & 30517-8

43.5 PSI / 3 BAR / 300 kPa

INPUT AMOUNT OF CYLINDERS/ROTORS	4.00 Cyl/Rotors
PRIMARY/SECONDARY TOTAL FLOW	174.17 lb.hr
SINGLE INJECTOR FLOW	43.54 lb/hr

INJECTOR OFF TIME									
Voltage	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
Off Time	1.873	1.626	1.412	1.226	1.064	0.924	0.802	0.696	0.604

58 PSI / 4 BAR / 400 kPa

INPUT AMOUNT OF CYLINDERS/ROTORS	4.00 Cyl/Rotors
PRIMARY/SECONDARY TOTAL FLOW	199.78 lb.hr
SINGLE INJECTOR FLOW	49.95 lb/hr

INJECTOR OFF TIME									
Voltage	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
Off Time	2.046	1.777	1.542	1.339	1.162	1.009	0.876	0.761	0.660



FUEL INJECTOR CHARACTERIZATION
ACES INJECTOR DATA 30517-1 & 30517-8

43.5 PSI / 3 BAR / 300 kPa

RATED FLOW PER INJECTOR (mg/s): 5485.89

INJECTOR MINIMUM PULSEWIDTH (Min Fuel PW)								
Voltage	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
Time(μs)	523.85	523.85	523.85	523.85	523.85	523.85	523.85	523.85

INJECTOR OFF TIME								
Voltage	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
Time(μs)	2326.34	2199.12	2076.15	1957.42	1842.94	1732.69	1626.70	1524.94



FUEL INJECTOR CHARACTERIZATION
UNIVERSAL INJECTOR DATA 30517-1 & 30517-8

INJECTOR FLOW RATE VS. PRESSURE

Pressure Bar	1	2	3	3.5	4	5	6	7	8
Pressure kPa	100	200	300	350	400	500	600	700	800
Pressure psi	14.5	29	43.5	58	58	72.5	87	101.5	116
Flowrate cc/min	328	392	456	489	523	585	650	714	779
Flowrate lb/hr	31.3	37.5	43.5	46.7	49.9	55.8	62.1	68.2	74.4
Flowrate g/s	3.95	4.72	5.49	5.89	6.29	7.04	7.82	8.60	9.37

BATTERY OFFSET VS. VOLTAGE VS PRESSURE:

Pressure Bar		1	2	3	3.5	4	5	6	7	8
Pressure kPa		100	200	300	350	400	500	600	700	800
Pressure psi		14.5	29	43.5	43.5	58	72.5	87	101.5	116
Voltage	4.0	2.317	2.595	2.878	3.144	3.434	3.708	3.986	4.264	4.542
	4.5	2.201	2.465	2.733	2.986	3.262	3.522	3.786	4.051	4.315
	5.0	2.088	2.339	2.594	2.833	3.095	3.342	3.593	3.843	4.094
	5.5	1.979	2.217	2.458	2.685	2.933	3.167	3.405	3.642	3.880
	6.0	1.873	2.098	2.326	2.541	2.776	2.998	3.222	3.447	3.672
	6.5	1.771	1.983	2.199	2.402	2.624	2.834	3.046	3.259	3.471
	7.0	1.672	1.873	2.076	2.268	2.478	2.675	2.876	3.077	3.277
	7.5	1.576	1.765	1.957	2.138	2.336	2.522	2.711	2.901	3.090
	8.0	1.484	1.662	1.843	2.013	2.199	2.375	2.553	2.731	2.909
	8.5	1.395	1.563	1.733	1.893	2.068	2.233	2.400	2.568	2.735
	9.0	1.310	1.467	1.627	1.777	1.941	2.096	2.253	2.411	2.568
	9.5	1.228	1.375	1.525	1.666	1.820	1.965	2.112	2.260	2.407
	10.0	1.149	1.287	1.427	1.559	1.703	1.839	1.977	2.115	2.253
	10.5	1.074	1.203	1.334	1.457	1.592	1.719	1.848	1.977	2.106
	11.0	1.003	1.123	1.245	1.360	1.486	1.604	1.725	1.845	1.965
	11.5	0.934	1.047	1.160	1.268	1.385	1.495	1.607	1.720	1.832
	12.0	0.870	0.974	1.080	1.180	1.289	1.391	1.496	1.600	1.705
	12.5	0.808	0.905	1.004	1.096	1.198	1.293	1.390	1.487	1.584
	13.0	0.750	0.840	0.932	1.018	1.112	1.200	1.290	1.380	1.470
	13.5	0.696	0.779	0.864	0.944	1.031	1.113	1.196	1.280	1.363
	14.0	0.644	0.722	0.800	0.874	0.955	1.031	1.108	1.186	1.263
	14.5	0.597	0.668	0.741	0.809	0.884	0.955	1.026	1.098	1.169
	15.0	0.552	0.619	0.686	0.749	0.818	0.884	0.950	1.016	1.082
	15.5	0.511	0.573	0.635	0.694	0.758	0.818	0.880	0.941	1.002
	16.0	0.474	0.531	0.588	0.643	0.702	0.758	0.815	0.872	0.929
	16.5	0.440	0.492	0.546	0.596	0.652	0.704	0.756	0.809	0.862
	17.0	0.409	0.458	0.508	0.555	0.606	0.654	0.704	0.753	0.802
	17.5	0.382	0.428	0.474	0.518	0.566	0.611	0.657	0.703	0.748
	18.0	0.358	0.401	0.444	0.486	0.530	0.573	0.616	0.659	0.702
	18.5	0.337	0.378	0.419	0.458	0.500	0.540	0.581	0.621	0.662
	19.0	0.320	0.359	0.398	0.435	0.475	0.513	0.551	0.590	0.628
	19.5	0.307	0.344	0.381	0.416	0.455	0.491	0.528	0.565	0.602
	20.0	0.290	0.325	0.360	0.393	0.430	0.464	0.499	0.534	0.568