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30592-1 & 30592-8

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FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30592-1 & 30592-8
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	3.817	3.838	3.860	3.881	3.903	3.925	3.946	3.968	3.989	4.011	4.033	4.054	4.076	4.097	4.119	4.141	4.162
5.0	3.500	3.520	3.540	3.559	3.579	3.599	3.619	3.639	3.658	3.678	3.698	3.718	3.738	3.757	3.777	3.797	3.817
5.5	3.210	3.228	3.246	3.264	3.282	3.300	3.319	3.337	3.355	3.373	3.391	3.409	3.427	3.446	3.464	3.482	3.500
6.0	2.943	2.960	2.977	2.993	3.010	3.026	3.043	3.060	3.076	3.093	3.110	3.126	3.143	3.160	3.176	3.193	3.210
6.5	2.699	2.714	2.730	2.745	2.760	2.775	2.791	2.806	2.821	2.836	2.852	2.867	2.882	2.897	2.913	2.928	2.943
7.0	2.475	2.489	2.503	2.517	2.531	2.545	2.559	2.573	2.587	2.601	2.615	2.629	2.643	2.657	2.671	2.685	2.699
7.5	2.270	2.283	2.295	2.308	2.321	2.334	2.347	2.360	2.372	2.385	2.398	2.411	2.424	2.437	2.449	2.462	2.475
8.0	2.081	2.093	2.105	2.117	2.128	2.140	2.152	2.164	2.176	2.187	2.199	2.211	2.223	2.234	2.246	2.258	2.270
8.5	1.909	1.919	1.930	1.941	1.952	1.963	1.973	1.984	1.995	2.006	2.017	2.027	2.038	2.049	2.060	2.071	2.081
9.0	1.750	1.760	1.770	1.780	1.790	1.800	1.810	1.820	1.829	1.839	1.849	1.859	1.869	1.879	1.889	1.899	1.909
9.5	1.605	1.614	1.623	1.632	1.641	1.650	1.659	1.669	1.678	1.687	1.696	1.705	1.714	1.723	1.732	1.741	1.750
10.0	1.472	1.480	1.488	1.497	1.505	1.513	1.522	1.530	1.538	1.547	1.555	1.563	1.572	1.580	1.588	1.597	1.605
10.5	1.350	1.357	1.365	1.373	1.380	1.388	1.396	1.403	1.411	1.418	1.426	1.434	1.441	1.449	1.457	1.464	1.472
11.0	1.238	1.245	1.252	1.259	1.266	1.273	1.280	1.287	1.294	1.301	1.308	1.315	1.322	1.329	1.336	1.343	1.350
11.5	1.135	1.141	1.148	1.154	1.161	1.167	1.174	1.180	1.186	1.193	1.199	1.206	1.212	1.218	1.225	1.231	1.238
12.0	1.041	1.047	1.053	1.058	1.064	1.070	1.076	1.082	1.088	1.094	1.100	1.106	1.111	1.117	1.123	1.129	1.135
12.5	0.954	0.960	0.965	0.971	0.976	0.981	0.987	0.992	0.998	1.003	1.008	1.014	1.019	1.025	1.030	1.035	1.041
13.0	0.875	0.880	0.885	0.890	0.895	0.900	0.905	0.910	0.915	0.920	0.925	0.930	0.935	0.940	0.945	0.950	0.954
13.5	0.803	0.807	0.812	0.816	0.821	0.825	0.830	0.834	0.839	0.843	0.848	0.853	0.857	0.862	0.866	0.871	0.875
14.0	0.736	0.740	0.744	0.749	0.753	0.757	0.761	0.765	0.769	0.773	0.778	0.782	0.786	0.790	0.794	0.798	0.803
14.5	0.675	0.679	0.683	0.686	0.690	0.694	0.698	0.702	0.705	0.709	0.713	0.717	0.721	0.725	0.728	0.732	0.736
15.0	0.619	0.622	0.626	0.629	0.633	0.636	0.640	0.643	0.647	0.650	0.654	0.657	0.661	0.664	0.668	0.671	0.675
15.5	0.568	0.571	0.574	0.577	0.580	0.584	0.587	0.590	0.593	0.596	0.600	0.603	0.606	0.609	0.613	0.616	0.619
16.0	0.520	0.523	0.526	0.529	0.532	0.535	0.538	0.541	0.544	0.547	0.550	0.553	0.556	0.559	0.562	0.565	0.568
16.5	0.477	0.480	0.483	0.485	0.488	0.491	0.493	0.496	0.499	0.502	0.504	0.507	0.510	0.512	0.515	0.518	0.520
17.0	0.438	0.440	0.443	0.445	0.448	0.450	0.453	0.455	0.457	0.460	0.462	0.465	0.467	0.470	0.472	0.475	0.477
17.5	0.401	0.404	0.406	0.408	0.410	0.413	0.415	0.417	0.420	0.422	0.424	0.426	0.429	0.431	0.433	0.435	0.438
18.0	0.368	0.370	0.372	0.374	0.376	0.378	0.381	0.383	0.385	0.387	0.389	0.391	0.393	0.395	0.397	0.399	0.401

*Pick which table that best fits in your ECU



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30592-1 & 30592-8
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	3.500	3.540	3.579	3.619	3.658	3.698	3.738	3.777	3.817	3.860	3.903	3.946	3.989	4.033	4.076	4.119	4.162
5.0	3.210	3.246	3.282	3.319	3.355	3.391	3.427	3.464	3.500	3.540	3.579	3.619	3.658	3.698	3.738	3.777	3.817
5.5	2.943	2.977	3.010	3.043	3.076	3.110	3.143	3.176	3.210	3.246	3.282	3.319	3.355	3.391	3.427	3.464	3.500
6.0	2.699	2.730	2.760	2.791	2.821	2.852	2.882	2.913	2.943	2.977	3.010	3.043	3.076	3.110	3.143	3.176	3.210
6.5	2.475	2.503	2.531	2.559	2.587	2.615	2.643	2.671	2.699	2.730	2.760	2.791	2.821	2.852	2.882	2.913	2.943
7.0	2.270	2.295	2.321	2.347	2.372	2.398	2.424	2.449	2.475	2.503	2.531	2.559	2.587	2.615	2.643	2.671	2.699
7.5	2.081	2.105	2.128	2.152	2.176	2.199	2.223	2.246	2.270	2.295	2.321	2.347	2.372	2.398	2.424	2.449	2.475
8.0	1.909	1.930	1.952	1.973	1.995	2.017	2.038	2.060	2.081	2.105	2.128	2.152	2.176	2.199	2.223	2.246	2.270
8.5	1.750	1.770	1.790	1.810	1.829	1.849	1.869	1.889	1.909	1.930	1.952	1.973	1.995	2.017	2.038	2.060	2.081
9.0	1.605	1.623	1.641	1.659	1.678	1.696	1.714	1.732	1.750	1.770	1.790	1.810	1.829	1.849	1.869	1.889	1.909
9.5	1.472	1.488	1.505	1.522	1.538	1.555	1.572	1.588	1.605	1.623	1.641	1.659	1.678	1.696	1.714	1.732	1.750
10.0	1.350	1.365	1.380	1.396	1.411	1.426	1.441	1.457	1.472	1.488	1.505	1.522	1.538	1.555	1.572	1.588	1.605
10.5	1.238	1.252	1.266	1.280	1.294	1.308	1.322	1.336	1.350	1.365	1.380	1.396	1.411	1.426	1.441	1.457	1.472
11.0	1.135	1.148	1.161	1.174	1.186	1.199	1.212	1.225	1.238	1.252	1.266	1.280	1.294	1.308	1.322	1.336	1.350
11.5	1.041	1.053	1.064	1.076	1.088	1.100	1.111	1.123	1.135	1.148	1.161	1.174	1.186	1.199	1.212	1.225	1.238
12.0	0.954	0.965	0.976	0.987	0.998	1.008	1.019	1.030	1.041	1.053	1.064	1.076	1.088	1.100	1.111	1.123	1.135
12.5	0.875	0.885	0.895	0.905	0.915	0.925	0.935	0.945	0.954	0.965	0.976	0.987	0.998	1.008	1.019	1.030	1.041
13.0	0.803	0.812	0.821	0.830	0.839	0.848	0.857	0.866	0.875	0.885	0.895	0.905	0.915	0.925	0.935	0.945	0.954
13.5	0.736	0.744	0.753	0.761	0.769	0.778	0.786	0.794	0.803	0.812	0.821	0.830	0.839	0.848	0.857	0.866	0.875
14.0	0.675	0.683	0.690	0.698	0.705	0.713	0.721	0.728	0.736	0.744	0.753	0.761	0.769	0.778	0.786	0.794	0.803
14.5	0.619	0.626	0.633	0.640	0.647	0.654	0.661	0.668	0.675	0.683	0.690	0.698	0.705	0.713	0.721	0.728	0.736
15.0	0.568	0.574	0.580	0.587	0.593	0.600	0.606	0.613	0.619	0.626	0.633	0.640	0.647	0.654	0.661	0.668	0.675
15.5	0.520	0.526	0.532	0.538	0.544	0.550	0.556	0.562	0.568	0.574	0.580	0.587	0.593	0.600	0.606	0.613	0.619
16.0	0.477	0.483	0.488	0.493	0.499	0.504	0.510	0.515	0.520	0.526	0.532	0.538	0.544	0.550	0.556	0.562	0.568
16.5	0.438	0.443	0.448	0.453	0.457	0.462	0.467	0.472	0.477	0.483	0.488	0.493	0.499	0.504	0.510	0.515	0.520
17.0	0.401	0.406	0.410	0.415	0.420	0.424	0.429	0.433	0.438	0.443	0.448	0.453	0.457	0.462	0.467	0.472	0.477
17.5	0.368	0.372	0.376	0.381	0.385	0.389	0.393	0.397	0.401	0.406	0.410	0.415	0.420	0.424	0.429	0.433	0.438
18.0	0.338	0.341	0.345	0.349	0.353	0.357	0.360	0.364	0.368	0.372	0.376	0.381	0.385	0.389	0.393	0.397	0.401
18.5	0.310	0.313	0.317	0.320	0.324	0.327	0.331	0.334	0.338	0.341	0.345	0.349	0.353	0.357	0.360	0.364	0.368
19.0	0.284	0.287	0.290	0.293	0.297	0.300	0.303	0.306	0.310	0.313	0.317	0.320	0.324	0.327	0.331	0.334	0.338
19.5	0.260	0.263	0.266	0.269	0.272	0.275	0.278	0.281	0.284	0.287	0.290	0.293	0.297	0.300	0.303	0.306	0.310
20.0	0.239	0.241	0.244	0.247	0.249	0.252	0.255	0.258	0.260	0.263	0.266	0.269	0.272	0.275	0.278	0.281	0.284
20.5	0.219	0.221	0.224	0.226	0.229	0.231	0.234	0.236	0.239	0.241	0.244	0.247	0.249	0.252	0.255	0.258	0.260

*Pick which table that best fits in your ECU



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30592-1 & 30592-8
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	2.781	2.802	2.823	2.847	2.868	2.889	2.909	2.933	2.954	2.975	2.996	3.020	3.041	3.061	3.082	3.106	3.127	3.148	3.168	3.192	3.213	3.234	3.258	3.279	3.300	3.320	3.344	3.365	3.386	3.407	3.431	3.452	3.472
5.0	2.621	2.641	2.661	2.683	2.703	2.722	2.742	2.765	2.784	2.804	2.823	2.846	2.866	2.885	2.905	2.927	2.947	2.966	2.986	3.009	3.028	3.048	3.071	3.090	3.110	3.129	3.152	3.172	3.191	3.211	3.233	3.253	3.272
5.5	2.467	2.485	2.503	2.525	2.543	2.562	2.580	2.601	2.620	2.638	2.657	2.678	2.696	2.715	2.733	2.755	2.773	2.791	2.810	2.831	2.850	2.868	2.889	2.908	2.926	2.944	2.966	2.984	3.003	3.021	3.042	3.061	3.079
6.0	2.317	2.334	2.352	2.372	2.389	2.406	2.424	2.444	2.461	2.478	2.496	2.516	2.533	2.550	2.567	2.588	2.605	2.622	2.639	2.660	2.677	2.694	2.714	2.731	2.749	2.766	2.786	2.803	2.821	2.838	2.858	2.875	2.893
6.5	2.173	2.189	2.205	2.224	2.240	2.257	2.273	2.292	2.308	2.324	2.340	2.359	2.375	2.391	2.408	2.426	2.443	2.459	2.475	2.494	2.510	2.526	2.545	2.561	2.578	2.594	2.613	2.629	2.645	2.661	2.680	2.696	2.712
7.0	2.034	2.049	2.064	2.082	2.097	2.112	2.127	2.145	2.160	2.175	2.190	2.208	2.223	2.238	2.254	2.271	2.286	2.302	2.317	2.334	2.350	2.365	2.382	2.398	2.413	2.428	2.446	2.461	2.476	2.491	2.509	2.524	2.539
7.5	1.900	1.914	1.928	1.945	1.959	1.973	1.987	2.004	2.018	2.032	2.046	2.063	2.077	2.091	2.105	2.122	2.136	2.150	2.164	2.181	2.195	2.209	2.226	2.240	2.254	2.268	2.285	2.299	2.313	2.327	2.344	2.358	2.372
8.0	1.772	1.785	1.798	1.813	1.827	1.840	1.853	1.868	1.882	1.895	1.908	1.923	1.937	1.950	1.963	1.978	1.992	2.005	2.018	2.033	2.047	2.060	2.075	2.088	2.102	2.115	2.130	2.143	2.157	2.170	2.185	2.198	2.212
8.5	1.648	1.661	1.673	1.687	1.700	1.712	1.724	1.738	1.751	1.763	1.775	1.790	1.802	1.814	1.826	1.841	1.853	1.865	1.878	1.892	1.904	1.916	1.931	1.943	1.955	1.968	1.982	1.994	2.007	2.019	2.033	2.045	2.058
9.0	1.530	1.542	1.553	1.566	1.578	1.589	1.601	1.614	1.625	1.637	1.648	1.661	1.673	1.684	1.696	1.709	1.720	1.732	1.743	1.757	1.768	1.779	1.793	1.804	1.815	1.827	1.840	1.852	1.863	1.874	1.888	1.899	1.910
9.5	1.418	1.428	1.439	1.451	1.462	1.472	1.483	1.495	1.506	1.516	1.527	1.539	1.550	1.560	1.571	1.583	1.594	1.604	1.615	1.627	1.638	1.648	1.661	1.671	1.682	1.692	1.705	1.715	1.726	1.736	1.749	1.759	1.770
10.0	1.310	1.320	1.330	1.341	1.351	1.361	1.370	1.382	1.392	1.401	1.411	1.422	1.432	1.442	1.452	1.463	1.473	1.483	1.492	1.504	1.514	1.523	1.535	1.544	1.554	1.564	1.575	1.585	1.595	1.605	1.616	1.626	1.636
10.5	1.208	1.217	1.226	1.236	1.245	1.254	1.263	1.274	1.283	1.292	1.301	1.311	1.320	1.329	1.338	1.349	1.358	1.367	1.376	1.386	1.395	1.404	1.415	1.424	1.433	1.442	1.452	1.461	1.470	1.479	1.490	1.499	1.508
11.0	1.111	1.119	1.128	1.137	1.145	1.154	1.162	1.172	1.180	1.188	1.197	1.206	1.214	1.223	1.231	1.241	1.249	1.257	1.265	1.275	1.283	1.292	1.301	1.310	1.318	1.326	1.336	1.344	1.352	1.361	1.370	1.379	1.387
11.5	1.019	1.027	1.034	1.043	1.051	1.059	1.066	1.075	1.083	1.090	1.098	1.107	1.114	1.122	1.129	1.138	1.146	1.153	1.161	1.170	1.177	1.185	1.194	1.202	1.209	1.217	1.226	1.233	1.241	1.248	1.257	1.265	1.272
12.0	0.933	0.940	0.947	0.955	0.962	0.969	0.976	0.984	0.991	0.998	1.005	1.013	1.020	1.027	1.034	1.042	1.049	1.056	1.063	1.071	1.078	1.085	1.093	1.100	1.107	1.114	1.122	1.129	1.136	1.142	1.151	1.158	1.164
12.5	0.852	0.858	0.864	0.872	0.878	0.884	0.891	0.898	0.905	0.911	0.917	0.925	0.931	0.937	0.944	0.951	0.957	0.964	0.970	0.977	0.984	0.990	0.998	1.004	1.010	1.017	1.024	1.030	1.037	1.043	1.050	1.057	1.063
13.0	0.776	0.781	0.787	0.794	0.800	0.806	0.811	0.818	0.824	0.830	0.835	0.842	0.848	0.854	0.860	0.866	0.872	0.878	0.884	0.890	0.896	0.902	0.909	0.914	0.920	0.926	0.933	0.938	0.944	0.950	0.957	0.963	0.968
13.5	0.705	0.710	0.716	0.722	0.727	0.732	0.737	0.744	0.749	0.754	0.759	0.765	0.771	0.776	0.781	0.787	0.793	0.798	0.803	0.809	0.814	0.820	0.826	0.831	0.836	0.842	0.848	0.853	0.858	0.863	0.870	0.875	0.880
14.0	0.640	0.644	0.649	0.655	0.659	0.664	0.669	0.675	0.679	0.684	0.689	0.694	0.699	0.704	0.709	0.714	0.719	0.724	0.729	0.734	0.739	0.744	0.749	0.754	0.759	0.763	0.769	0.774	0.779	0.783	0.789	0.794	0.798
14.5	0.579	0.584	0.588	0.593	0.597	0.602	0.606	0.611	0.615	0.620	0.624	0.629	0.633	0.638	0.642	0.647	0.651	0.656	0.660	0.665	0.669	0.674	0.679	0.683	0.687	0.692	0.697	0.701	0.705	0.710	0.715	0.719	0.723
15.0	0.525	0.528	0.532	0.537	0.541	0.545	0.549	0.553	0.557	0.561	0.565	0.569	0.573	0.577	0.581	0.586	0.590	0.594	0.597	0.602	0.606	0.610	0.614	0.618	0.622	0.626	0.631	0.635	0.639	0.642	0.647	0.651	0.655
15.5	0.475	0.478	0.482	0.486	0.490	0.493	0.497	0.501	0.504	0.508	0.511	0.516	0.519	0.523	0.526	0.530	0.534	0.537	0.541	0.545	0.549	0.552	0.556	0.560	0.563	0.567	0.571	0.575	0.578	0.582	0.586	0.589	0.593
16.0	0.430	0.434	0.437	0.441	0.444	0.447	0.450	0.454	0.457	0.460	0.464	0.467	0.471	0.474	0.477	0.481	0.484	0.487	0.490	0.494	0.497	0.500	0.504	0.507	0.511	0.514	0.518	0.521	0.524	0.527	0.531	0.534	0.537
16.5	0.391	0.394	0.397	0.401	0.403	0.406	0.409	0.413	0.416	0.419	0.421	0.425	0.428	0.431	0.434	0.437	0.440	0.443	0.446	0.449	0.452	0.455	0.458	0.461	0.464	0.467	0.471	0.473	0.476	0.479	0.483	0.486	0.489
17.0	0.357	0.360	0.363	0.366	0.369	0.371	0.374	0.377	0.380	0.382	0.385	0.388	0.391	0.393	0.396	0.399	0.402	0.404	0.407	0.410	0.413	0.416	0.419	0.421	0.424	0.427	0.430	0.432	0.435	0.438	0.441	0.444	</



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30592-1 & 30592-8
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	2.943	3.036	3.129	3.222	3.314	3.407	3.500	3.583	3.666	3.748	3.831	3.914	3.997	4.079	4.162	4.261	4.359	4.457	4.556	4.654	4.753	4.851	4.949	5.066	5.183	5.301	5.418	5.535	5.652	5.769	5.886	5.886	5.886
5.0	2.475	2.553	2.631	2.709	2.787	2.865	2.943	3.013	3.082	3.152	3.222	3.291	3.361	3.430	3.500	3.583	3.666	3.748	3.831	3.914	3.997	4.079	4.162	4.261	4.359	4.457	4.556	4.654	4.753	4.851	4.949	4.949	4.949
6.0	2.081	2.147	2.213	2.278	2.344	2.409	2.475	2.534	2.592	2.651	2.709	2.768	2.826	2.885	2.943	3.013	3.082	3.152	3.222	3.291	3.361	3.430	3.500	3.583	3.666	3.748	3.831	3.914	3.997	4.079	4.162	4.162	4.162
7.0	1.750	1.805	1.861	1.916	1.971	2.026	2.081	2.131	2.180	2.229	2.278	2.327	2.377	2.426	2.475	2.534	2.592	2.651	2.709	2.768	2.826	2.885	2.943	3.013	3.082	3.152	3.222	3.291	3.361	3.430	3.500	3.500	3.500
8.0	1.472	1.518	1.565	1.611	1.657	1.704	1.750	1.792	1.833	1.874	1.916	1.957	1.999	2.040	2.081	2.131	2.180	2.229	2.278	2.327	2.377	2.426	2.475	2.534	2.592	2.651	2.709	2.768	2.826	2.885	2.943	2.943	2.943
9.0	1.238	1.277	1.316	1.355	1.394	1.433	1.472	1.507	1.541	1.576	1.611	1.646	1.681	1.715	1.750	1.792	1.833	1.874	1.916	1.957	1.999	2.040	2.081	2.131	2.180	2.229	2.278	2.327	2.377	2.426	2.475	2.475	2.475
10.0	1.041	1.074	1.106	1.139	1.172	1.205	1.238	1.267	1.296	1.326	1.355	1.384	1.413	1.443	1.472	1.507	1.541	1.576	1.611	1.646	1.681	1.715	1.750	1.792	1.833	1.874	1.916	1.957	1.999	2.040	2.081	2.081	2.081
11.0	0.875	0.903	0.930	0.958	0.986	1.013	1.041	1.065	1.090	1.115	1.139	1.164	1.188	1.213	1.238	1.267	1.296	1.326	1.355	1.384	1.413	1.443	1.472	1.507	1.541	1.576	1.611	1.646	1.681	1.715	1.750	1.750	1.750
12.0	0.736	0.759	0.782	0.806	0.829	0.852	0.875	0.896	0.917	0.937	0.958	0.979	0.999	1.020	1.041	1.065	1.090	1.115	1.139	1.164	1.188	1.213	1.238	1.267	1.296	1.326	1.355	1.384	1.413	1.443	1.472	1.472	1.472
13.0	0.619	0.638	0.658	0.677	0.697	0.717	0.736	0.753	0.771	0.788	0.806	0.823	0.840	0.858	0.875	0.896	0.917	0.937	0.958	0.979	0.999	1.020	1.041	1.065	1.090	1.115	1.139	1.164	1.188	1.213	1.238	1.238	1.238
14.0	0.520	0.537	0.553	0.570	0.586	0.603	0.619	0.634	0.648	0.663	0.677	0.692	0.707	0.721	0.736	0.753	0.771	0.788	0.806	0.823	0.840	0.858	0.875	0.896	0.917	0.937	0.958	0.979	0.999	1.020	1.041	1.041	1.041
15.0	0.438	0.451	0.465	0.479	0.493	0.507	0.520	0.533	0.545	0.557	0.570	0.582	0.594	0.607	0.619	0.634	0.648	0.663	0.677	0.692	0.707	0.721	0.736	0.753	0.771	0.788	0.806	0.823	0.840	0.858	0.875	0.875	0.875
16.0	0.368	0.380	0.391	0.403	0.414	0.426	0.438	0.448	0.458	0.469	0.479	0.489	0.500	0.510	0.520	0.533	0.545	0.557	0.570	0.582	0.594	0.607	0.619	0.634	0.648	0.663	0.677	0.692	0.707	0.721	0.736	0.736	0.736
17.0	0.310	0.319	0.329	0.339	0.349	0.358	0.368	0.377	0.385	0.394	0.403	0.412	0.420	0.429	0.438	0.448	0.458	0.469	0.479	0.489	0.500	0.510	0.520	0.533	0.545	0.557	0.570	0.582	0.594	0.607	0.619	0.619	0.619
18.0	0.260	0.268	0.277	0.285	0.293	0.301	0.310	0.317	0.324	0.331	0.339	0.346	0.353	0.361	0.368	0.377	0.385	0.394	0.403	0.412	0.420	0.429	0.438	0.448	0.458	0.469	0.479	0.489	0.500	0.510	0.520	0.520	0.520
19.0	0.219	0.226	0.233	0.240	0.246	0.253	0.260	0.266	0.273	0.279	0.285	0.291	0.297	0.303	0.310	0.317	0.324	0.331	0.339	0.346	0.353	0.361	0.368	0.377	0.385	0.394	0.403	0.412	0.420	0.429	0.438	0.438	0.438
20.0	0.184	0.190	0.196	0.201	0.207	0.213	0.219	0.224	0.229	0.234	0.240	0.245	0.250	0.255	0.260	0.266	0.273	0.279	0.285	0.291	0.297	0.303	0.310	0.317	0.324	0.331	0.339	0.346	0.353	0.361	0.368	0.368	0.368

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	2.943	3.024	3.105	3.186	3.266	3.347	3.428	3.500	3.563	3.625	3.688	3.751	3.813	3.876	3.939	4.013	4.088	4.162	4.234	4.306	4.378	4.450	4.522	4.607	4.693	4.778	4.864	4.949	5.262	5.574	5.886	5.886	5.886
5.0	2.475	2.543	2.611	2.679	2.747	2.815	2.883	2.943	2.996	3.049	3.101	3.154	3.207	3.259	3.312	3.375	3.437	3.500	3.561	3.621	3.681	3.742	3.802	3.874	3.946	4.018	4.090	4.162	4.425	4.687	4.949	4.949	4.949
6.0	2.081	2.138	2.196	2.253	2.310	2.367	2.424	2.475	2.519	2.564	2.608	2.652	2.697	2.741	2.785	2.838	2.891	2.943	2.994	3.045	3.096	3.147	3.198	3.258	3.319	3.379	3.440	3.500	3.721	3.941	4.162	4.162	4.162
7.0	1.750	1.798	1.846	1.894	1.942	1.990	2.039	2.081	2.119	2.156	2.193	2.230	2.268	2.305	2.342	2.386	2.431	2.475	2.518	2.561	2.603	2.646	2.689	2.740	2.791	2.842	2.892	2.943	3.129	3.314	3.500	3.500	3.500
8.0	1.472	1.512	1.553	1.593	1.633	1.674	1.714	1.750	1.782	1.813	1.844	1.876	1.907	1.938	1.970	2.007	2.044	2.081	2.117	2.153	2.189	2.225	2.261	2.304	2.347	2.390	2.432	2.475	2.631	2.787	2.943	2.943	2.943
9.0	1.238	1.272	1.306	1.340	1.374	1.408	1.442	1.472	1.498	1.525	1.551	1.577	1.604	1.630	1.656	1.688	1.719	1.750	1.781	1.811	1.841	1.871	1.902	1.937	1.973	2.009	2.045	2.081	2.213	2.344	2.475	2.475	2.475
10.0	1.041	1.069	1.098	1.127	1.155	1.184																											



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30592-1 & 30592-8
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)	59.4	59.7	60.1	60.5	60.8	61.2	61.5	61.9	62.2	62.6	63.0	63.3	63.6	64.0	64.3	64.7	65.0
Scaled Flow Rate (lb/hr)	29.7	29.9	30.0	30.2	30.4	30.6	30.8	30.9	31.1	31.3	31.5	31.6	31.8	32.0	32.2	32.3	32.5

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)	53.1	53.9	54.7	55.5	56.3	57.1	57.8	58.6	59.4	60.1	60.8	61.5	62.2	63.0	63.6	64.3	65.0
Scaled Flow Rate (lb/hr)	26.5	27.0	27.4	27.8	28.2	28.5	28.9	29.3	29.7	30.0	30.4	30.8	31.1	31.5	31.8	32.2	32.5

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)	50.4	50.8	51.3	51.8	52.2	52.6	53.1	53.6	54.0	54.5	54.9	55.4	55.9	56.3	56.7	57.7	58.1	58.6	59.1	59.5	60.0	60.5	60.9	61.3	61.8	62.3	62.7	63.2	63.6	64.1	64.6

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)	33.6	36.1	38.5	40.7	42.8	44.8	46.7	48.6	50.4	52.1	53.7	55.4	56.9	58.5	59.9	61.4	62.8	64.2	65.6	66.9	68.2	69.5	70.7	72.0	73.2	74.4	75.5	76.7	77.8	79.0	80.1	81.2	82.2
Scaled Flow Rate (lb/hr)	16.8	18.1	19.2	20.3	21.4	22.4	23.4	24.3	25.2	26.0	26.9	27.7	28.5	29.2	30.0	30.7	31.4	32.1	32.8	33.4	34.1	34.7	35.4	36.0	36.6	37.2	37.8	38.3	38.9	39.5	40.0	40.6	41.1

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)	33.6	35.6	37.5	39.4	41.1	42.8	44.4	46.0	47.5	48.9	50.4	51.7	53.1	54.4	55.7	56.9	58.2	59.4	60.5	61.7	62.8	63.9	65.0	66.1	67.1	68.2	69.2	70.2	71.2	72.2	73.2	74.1	75.1
Scaled Flow Rate (lb/hr)	16.8	17.8	18.8	19.7	20.6	21.4	22.2	23.0	23.7	24.5	25.2	25.9	26.5	27.2	27.8	28.5	29.1	29.7	30.3	30.8	31.4	32.0	32.5	33.0	33.6	34.1	34.6	35.1	35.6	36.1	36.6	37.1	37.5

*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	0.427	0.388	0.348	0.308	0.268	0.228	0.189	0.149	0.109	0.081	0.064	0.047	0.031	0.014	0.006	-0.003	-0.011	-0.018	-0.015	-0.013	-0.010	-0.010	-0.009	-0.009	-0.013	-0.020	-0.026	-0.032	-0.030	-0.028	-0.026	-0.020	-0.009

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	-0.006	-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	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	0.385	0.304	0.222	0.140	0.076	0.042	0.011	-0.006	-0.016	-0.011	-0.009	-0.011	-0.024	-0.031	-0.026	-0.016	-0.006	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

*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	0.402	0.271	0.205	0.140	0.083	0.028	0.007	-0.006	-0.017	-0.010	-0.009	-0.011	-0.022	-0.029	-0.025	-0.016	-0.007	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

*Cobalt Specific

SHORT PULSE LIMIT (ms)

4.000

DEFAULT PULSEWIDTH

0.664

*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	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000
Minimum Inj. PW	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640	0.6640

*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 30592-1 & 30592-8
For 2011+ applications, for older applications scroll down.

FLOW RATE	
Fuel Injector Breakpoint (lb)	0.0000159
Fuel Injector Hi Slope (lb/sec)	0.0164852
Fuel Injector Low Slope (lb/sec)	0.0208811
Fuel Injector Minimum Pulse Width (sec)	0.0004624
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	2.9433
7.0	2.4751
8.0	2.0814
9.0	1.7503
10.0	1.4719
11.0	1.2377
12.0	1.0408
13.0	0.8753
13.5	0.8026
14.0	0.7360
14.5	0.6750
15.0	0.6190

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)	0.0000136
Fuel Injector Hi Slope (lb/sec)	0.0137704
Fuel Injector Low Slope (lb/sec)	0.0174424
Fuel Injector Minimum Pulse Width (sec)	0.0004624
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	2.2822
8.0	1.7449
10.0	1.2904
11.0	1.0942
12.0	0.9188
13.0	0.7640
14.0	0.6300
15.0	0.5166

FLOW RATE LOW MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1840	1.0000
54.96	1.1401	1.0000
50.03	1.0970	1.0000
39.15	1.0000	1.0000
30.02	0.9231	1.0000
20.01	0.8362	1.0000

FLOW RATE HIGH MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1840	1.0000
54.96	1.1401	1.0000
50.03	1.0970	1.0000
39.15	1.0000	1.0000
30.02	0.9231	1.0000
20.01	0.8362	1.0000

BREAKPOINT MULT		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1840	1.0000
54.96	1.1401	1.0000
50.03	1.0970	1.0000
39.15	1.0000	1.0000
30.02	0.9231	1.0000
20.01	0.8362	1.0000

OFFSET MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1840	1.0000
54.96	1.1401	1.0000
50.03	1.0970	1.0000
39.15	1.0000	1.0000
30.02	0.9231	1.0000
20.01	0.8362	1.0000



FUEL INJECTOR CHARACTERIZATION

DODGE/CHRYSLER/JEEP INJECTOR DATA 30592-1 & 30592-8

INJECTOR PULSE WIDTH (ms)	FUEL MASS (Grams)
0.000	0.00000
0.000	0.00000
0.462	0.00433
0.662	0.00638
0.862	0.00811
1.062	0.00955
1.262	0.01103
1.462	0.01271
1.662	0.01415
1.862	0.01552
2.062	0.01695
3.062	0.02442
9.062	0.06928
49.062	0.36839

INJECTOR MIN PW	0.462
-----------------	-------

START UP SCALER	7.478
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IGNITION VOLTAGE (all in ms)									
KPa	6	7	8	10	12	14	15.8	15.8	15.8
0	3.142	2.680	2.284	1.673	1.244	0.938	0.746	0.746	0.746
20	3.207	2.734	2.330	1.705	1.267	0.954	0.758	0.758	0.758
40	3.273	2.790	2.377	1.738	1.290	0.971	0.770	0.770	0.770
80	3.408	2.904	2.473	1.806	1.338	1.005	0.795	0.795	0.795
100	3.479	2.963	2.523	1.841	1.363	1.022	0.808	0.808	0.808

IGNITION VOLTAGE (all in ms)									
KPa	8	9.5	11	12	12.8	13.5	14	14.7	15.5
-80	2.112	1.675	1.339	1.157	1.040	0.939	0.877	0.796	0.723
0	2.284	1.809	1.442	1.244	1.116	1.006	0.938	0.849	0.770
40	2.377	1.880	1.496	1.290	1.156	1.041	0.971	0.878	0.795
62	2.429	1.920	1.528	1.316	1.179	1.062	0.989	0.894	0.809
84	2.483	1.962	1.560	1.343	1.203	1.082	1.008	0.911	0.824

IGNITION VOLTAGE (all in ms)									
KPa	5	6	7	8	9	10.1	12.1	14.1	15.8
250	3.176	2.702	2.308	1.972	1.690	1.439	1.078	0.822	0.665
300	3.342	2.841	2.426	2.071	1.773	1.508	1.127	0.856	0.690
400	3.701	3.142	2.680	2.284	1.952	1.657	1.233	0.931	0.746
500	4.101	3.479	2.963	2.523	2.152	1.824	1.350	1.014	0.808
550	4.318	3.661	3.117	2.652	2.261	1.914	1.414	1.060	0.842

IGNITION VOLTAGE (all in ms)									
KPa	5	6	7	8	9	10.1	12.1	14.1	15.8
130	2.814	2.397	2.052	1.757	1.509	1.288	0.972	0.746	0.608
244	3.157	2.686	2.295	1.961	1.680	1.431	1.073	0.818	0.662
400	3.701	3.142	2.680	2.284	1.952	1.657	1.233	0.931	0.746
586	4.481	3.798	3.233	2.749	2.343	1.982	1.462	1.094	0.867
660	4.838	4.098	3.485	2.961	2.521	2.130	1.567	1.168	0.923

IGNITION VOLTAGE (all in ms)									
KPa	5	5.7	6.3	7	8	10	12	14	15.8
8	3.701	3.282	3.027	2.680	2.284	1.673	1.244	0.938	0.746
80	4.001	3.546	3.269	2.892	2.473	1.806	1.338	1.005	0.795
117	4.209	3.730	3.437	2.963	2.523	1.841	1.363	1.022	0.808
150	4.318	3.825	3.525	3.117	2.652	1.914	1.414	1.060	0.842
200	4.488	3.975	3.662	3.237	2.753	2.346	1.984	1.464	1.095

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



FUEL INJECTOR CHARACTERIZATION
HONDA/ACURA INJECTOR DATA 30592-1 & 30592-8

2002 AND NEWER
3.5 BAR, 350 kPa, 51 PSI. System

INJECTOR FLOW
583

BATTERY OFFSET	
Voltage	Offset
0	2.788
6	2.755
8	1.972
10	1.394
12	0.986
14	0.690
16	0.486
24	0.112

AFM FUEL	
Air Mass (mg)	51 PSI System
0	0.000
70	1.377
100	1.668
120	1.863
200	2.639
300	3.611
400	4.582
750	7.981
1000	10.408
1250	12.836
1500	15.264
1750	17.692
2000	20.119
2250	22.547
2500	24.975
2750	27.403

FUEL ECONOMY	
Inj. Flow for FE:	579
Inj. Flow for Dash:	579

2001 AND OLDER
3.0 BAR, 300 kPa, 43.5 PSI. System

INJECTOR FLOW
542

BATTERY OFFSET	
Voltage	Offset
0	2.641
6	2.609
8	1.868
10	1.321
12	0.934
14	0.654
16	0.467
24	0.106

AFM FUEL	
Air Mass (mg)	43.5 PSI System
0	0.000
70	1.392
100	1.705
120	1.914
200	2.750
300	3.795
400	4.840
750	8.498
1000	11.110
1250	13.723
1500	16.335
1750	18.947
2000	21.560
2250	24.172
2500	26.785
2750	29.397

FUEL ECONOMY	
Inj. Flow for FE:	581
Inj. Flow for Dash:	581



FUEL INJECTOR CHARACTERIZATION
MAZDA INJECTOR DATA 30592-1 & 30592-8

INJECTOR BASE PW

5.989

INJECTOR MINIMUM PW

0.664

INJECTOR FLOW RATE

557.9

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	2.653	2.676	2.699	2.722	2.746	2.769	2.793	2.817	2.841	2.866	2.891	2.915	2.941	2.966	2.992	3.017
	7.75	2.136	2.155	2.173	2.192	2.211	2.230	2.249	2.269	2.288	2.308	2.328	2.348	2.368	2.388	2.409	2.430
	9	1.720	1.735	1.750	1.765	1.781	1.796	1.811	1.827	1.843	1.859	1.875	1.891	1.907	1.923	1.940	1.957
	10.25	1.385	1.398	1.409	1.422	1.434	1.446	1.459	1.471	1.484	1.497	1.510	1.522	1.536	1.549	1.562	1.576
	11.5	1.116	1.125	1.135	1.145	1.155	1.165	1.175	1.185	1.195	1.205	1.216	1.226	1.237	1.247	1.258	1.269
	12.75	0.898	0.906	0.914	0.922	0.930	0.938	0.946	0.954	0.962	0.971	0.979	0.987	0.996	1.004	1.013	1.022
	14	0.724	0.730	0.736	0.742	0.749	0.755	0.762	0.768	0.775	0.782	0.788	0.795	0.802	0.809	0.816	0.823
	15.25	0.583	0.588	0.593	0.598	0.603	0.608	0.613	0.619	0.624	0.629	0.635	0.640	0.646	0.651	0.657	0.663
	16.5	0.469	0.473	0.477	0.481	0.486	0.490	0.494	0.498	0.502	0.507	0.511	0.516	0.520	0.524	0.529	0.534

VOLUMETRIC EFFICIENCY LOAD MULTIPLIER

RPM	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0	1.195	1.195	1.195	1.195	1.195	1.195	1.195	1.195	1.195	1.195	1.195	1.195	1.195	1.195	1.195
0.0625	1.129	1.129	1.129	1.129	1.129	1.129	1.129	1.129	1.129	1.129	1.129	1.129	1.129	1.129	1.129
0.125	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062
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 30592-1 & 30592-8
43.5 PSI / 3 BAR / 300 KPa

INJECTOR SIZE (cc/min)	542
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BATTERY VOLTAGE LATENCY COMPENSATION							
Voltage	4.69	7.99	9.97	12.02	14.00	15.98	18.77
Latency	3.314	1.871	1.328	0.931	0.660	0.469	0.289



FUEL INJECTOR CHARACTERIZATION
MERCEDES/BOSCH INJECTOR DATA 30592-1 & 30592-8

INJECTOR CONSTANT	
MS/%	0.06089

OFFSET VS. VOLTAGE					
Volts	7.5	10.6	12.1	15.1	16.6
ms	2.256	1.316	1.030	0.611	0.471

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	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
760	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1000	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1240	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1520	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2000	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2520	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3000	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3520	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4000	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4520	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5000	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5520	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6000	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6520	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7000	0.9936	0.9923	0.9864	0.9870	0.9988	1.0001	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



FUEL INJECTOR CHARACTERIZATION
NISSAN/INFINITI INJECTOR DATA 30592-1 & 30592-8

INJECTOR LATENCY	
Injector Scalar	0.736
Injector Offset	-0.122
MIN. PULSEWIDTH	664 µs
INJECTOR SCALAR	
350 KPa (cc/min)	582.9
300 KPa (cc/min)	541.7
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	1.318	1.108	0.932	0.784	0.659	0.554	0.466	0.392
25.2	1.370	1.152	0.969	0.815	0.685	0.576	0.485	0.408
31.6	1.437	1.209	1.016	0.855	0.719	0.604	0.508	0.427
39.9	1.529	1.286	1.081	0.909	0.764	0.643	0.541	0.455
50.2	1.651	1.388	1.167	0.982	0.826	0.694	0.584	0.491
63.1	1.818	1.529	1.286	1.081	0.909	0.764	0.643	0.541
79.5	2.054	1.728	1.453	1.222	1.027	0.864	0.727	0.611
100.0	2.393	2.013	1.692	1.423	1.197	1.006	0.846	0.712

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	110	103	100	99	99	99	99	98	99	100	100	100	100	100	100	100
25	110	103	100	99	99	99	99	98	99	100	100	100	100	100	100	100
32	110	103	100	99	99	99	99	98	99	100	100	100	100	100	100	100
40	110	103	100	99	99	99	99	98	99	100	100	100	100	100	100	100
50	110	103	100	99	99	99	99	98	99	100	100	100	100	100	100	100
63	110	103	100	99	99	99	99	98	99	100	100	100	100	100	100	100
79	110	103	100	99	99	99	99	98	99	100	100	100	100	100	100	100
100	110	103	100	99	99	99	99	98	99	100	100	100	100	100	100	100



FUEL INJECTOR CHARACTERIZATION
SUBARU INJECTOR DATA 30592-1 & 30592-8

INJECTOR CONSTANT
5329.3 μ s

FLOW RATE
6.52 g/s

INJ. PULSEWIDTH LIMIT
0.740 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	2.10	1.36	0.88	0.57	0.37
	0	2.42	1.57	1.02	0.66	0.43
	19.34	2.80	1.81	1.18	0.76	0.49

02-05 WRX SPECIFIC						
Voltage		6.05	9	11.5	14	16.5
MAP (psi.)	-19.34	1.62	1.14	0.81	0.57	0.40
	0	1.87	1.32	0.93	0.66	0.47
	19.34	2.16	1.53	1.08	0.76	0.54

FUEL INJECTOR TRIM (Small IPW) 05-05 WRX SPECIFIC						
PW	0.275	0.820	1.365	1.910	2.455	3.000
%	0.045	-0.014	-0.026	-0.008	0.000	0.000

FUEL INJECTOR TRIM (Small IPW)								
PW	0.275	0.665	1.054	1.443	1.832	2.222	2.611	3.000
%	6.04	-1.40	-0.67	-1.88	-0.62	0.02	0.01	0.00

VEHICLES WITH GDI AND PORT INJECTION USE BELOW

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

INJECTOR SCALING
621 cc/min

LOW PW INJ. COMP	
0.740	1.0604
1.062	0.9860
1.385	0.9933
1.708	0.9812
2.031	0.9938
2.354	1.0002
2.677	1.0001
3.000	1.0000

INJ. MIN. OPEN TIME
0.7395 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	2.081	1.472	1.041	0.736	0.520
	0	2.081	1.472	1.041	0.736	0.520
	1000	2.081	1.472	1.041	0.736	0.520



FUEL INJECTOR CHARACTERIZATION
AEM INJECTOR DATA 30592-1 & 30592-8

AEM INFINITY	Injector Flow Rate (cc/min)								
Pressure	20	30	40	50	60	70	80	90	100
Flow	366	449	519	581	637	688	729	775	817

INJECTOR OFFSET (ms)		Battery (Volts)			
		10.0	12.0	14.0	16.0
Inj Pressure (psig)	100.0	1.94	1.37	0.97	0.69
	90.0	1.83	1.29	0.92	0.65
	80.0	1.72	1.22	0.86	0.61
	70.0	1.61	1.14	0.80	0.57
	60.0	1.50	1.06	0.75	0.53
	50.0	1.39	0.98	0.69	0.49
	40.0	1.28	0.90	0.64	0.45
	30.0	1.17	0.83	0.58	0.41
	20.0	1.06	0.75	0.53	0.37

AEM EMS, SERIES 1 AND 2	Battery Offset Primary										
Battery Volts	6	7	8	9	10	11	12	13	14	15	16
Batt Offset	2.64	2.25	1.87	1.59	1.32	1.13	0.93	0.79	0.65	0.56	0.47

Inj Size (cc's/min)	542
Injector Min (uSec)	664
Injector Duty Max	95%

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



FUEL INJECTOR CHARACTERIZATION
ECU MASTERS INJECTOR DATA 30592-1 & 30592-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR SIZE (cc/min)	542
------------------------	-----

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	2.380	2.089	1.820	1.572	1.346	1.141	0.958	0.797	0.657	0.539	0.442	0.367

58 PSI / 4 BAR / 400 kPa

INJECTOR SIZE (cc/min)	621
------------------------	-----

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	2.652	2.328	2.028	1.752	1.500	1.272	1.068	0.888	0.732	0.600	0.493	0.409



FUEL INJECTOR CHARACTERIZATION
FAST XFI 2.0 INJECTOR DATA 30592-1 & 30592-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR FLOW RATE (lbs/hr)	51.7
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INJECTOR OPENING OFFSET VS BATTERY VOLTAGE								
Volts	8	9	10	11	12	13	14	16
Offset (ms)	1.82	1.57	1.35	1.14	0.96	0.8	0.66	0.44

58 PSI / 4 BAR / 400 kPa

INJECTOR FLOW RATE (lbs/hr)	59.4
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INJECTOR OPENING OFFSET VS BATTERY VOLTAGE								
Volts	8	9	10	11	12	13	14	16
Offset (ms)	2.26	1.95	1.67	1.42	1.19	0.99	0.82	0.55

FAST XFI SPORTSMAN & STREET INJECTOR DATA

43.5 PSI / 3 BAR / 300 kPa	
Injector Flow Rate (lbs/hr)	52
Injector Opening Tims (ms)	0.7

58 PSI / 4 BAR / 400 kPa	
Injector Flow Rate (lbs/hr)	59
Injector Opening Tims (ms)	0.8



FUEL INJECTOR CHARACTERIZATION
HALTECH DATA 30592-1 & 30592-8

HALTECH ELITE AND NEXUS

DEAD TIME TABLE				
Volts\PSI	29.000	43.500	58.000	72.500
16.0	0.388	0.442	0.493	0.549
14.0	0.576	0.657	0.732	0.816
12.0	0.840	0.958	1.068	1.190
10.0	1.180	1.346	1.500	1.671
8.0	1.596	1.820	2.028	2.260
6.0	2.087	2.380	2.652	2.955

INJECTOR FLOW TABLE				
PSI	29.0	43.5	58.0	72.5
Flow(cc)	466	542	621	695

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	0.387	0.336	0.271	0.205	0.140	0.089	0.055	0.029	0.007	-0.006	-0.014	-0.013	-0.011	-0.010	-0.011	-0.022	-0.024	-0.029	-0.024	-0.016	-0.008	-0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

INJ FLOW RATE (cc/min)	542
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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	1.793	1.719	1.645	1.571	1.508	1.446	1.383	1.321	1.268	1.216	1.163	1.111	1.067	1.022	0.978	0.934	0.897	0.860	0.823	0.785	0.754	0.723	0.692	0.660	0.634	0.608	0.582	0.555	0.533	0.511	0.489	0.467

58 PSI / 4 BAR / 400 kPa

INJ FLOW RATE (cc/min)	621
------------------------	-----

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	1.999	1.916	1.833	1.750	1.681	1.611	1.541	1.472	1.413	1.355	1.296	1.238	1.188	1.139	1.090	1.041	0.999	0.958	0.917	0.875	0.840	0.806	0.771	0.736	0.707	0.677	0.648	0.619	0.594	0.570	0.545	0.520



FUEL INJECTOR CHARACTERIZATION

HOLLEY TERMINATOR/DOMINATOR INJECTOR DATA 30592-1 & 30592-8

43.5 PSI / 3 BAR / 300 kPa

RATED FLOW PER INJECTOR (lb/hr)				51.74		INJECTOR TYPE				High Impedance		MIN INJECTOR OPENING TIME				0.664	
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	1.63	1.42	1.23	1.07	0.93	0.81	0.71	0.62	0.54	0.47	0.41	0.35	0.31	0.27	0.23	

58 PSI / 4 BAR / 400 kPa

RATED FLOW PER INJECTOR (lb/hr)		59.35				INJECTOR TYPE				High Impedance		MIN INJECTOR OPENING TIME (ms)		0.664		
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	2.08	1.81	1.58	1.37	1.20	1.04	0.91	0.79	0.69	0.60	0.52	0.45	0.39	0.34	0.30	0.26



FUEL INJECTOR CHARACTERIZATION
LINK ECU INJECTOR DATA 30592-1 & 30592-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)										542										MINIMUM PULSE WIDTH (ms)										0.664									
INJECTOR DEAD TIME (ms)																																							
Voltage	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																							
Dead Time	2.089	1.820	1.572	1.346	1.141	0.958	0.797	0.657	0.539	0.442	0.367	0.314	0.282	0.272	0.253	0.245																							
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	0.385	0.304	0.222	0.140	0.076	0.042	0.011	-0.006	-0.016	-0.011	-0.009	-0.011	-0.024	-0.031	-0.026	-0.016	-0.006	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						

58 PSI / 4 BAR / 400 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)										621					MINIMUM PULSE WIDTH (ms)										0.664								
INJECTOR DEAD TIME (ms)																																	
Voltage	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																	
Dead Time	2.328	2.028	1.752	1.500	1.272	1.068	0.888	0.732	0.600	0.493	0.409	0.350	0.314	0.303	0.282	0.274																	
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	0.385	0.304	0.222	0.140	0.076	0.042	0.011	-0.006	-0.016	-0.011	-0.009	-0.011	-0.024	-0.031	-0.026	-0.016	-0.006	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



FUEL INJECTOR CHARACTERIZATION
MEGASQUIRT/TUNERSTUDIO INJECTOR DATA 30592-1 & 30592-8

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)		542
BATTERY OFFSET		
Curve 1		
7.2		214.5
9.6		141.6
12.0		93.4
14.4		61.6
16.8		40.7
19.2		26.8
BANK 1 Dead-Time @ 100%(ms)		1.000

58 PSI / 4 BAR / 400 kPa

INJECTOR SIZE EACH (cc)		621
BATTERY OFFSET		
Curve 2		
7.2		239.1
9.6		157.7
12.0		104.1
14.4		68.7
16.8		45.3
19.2		29.9
BANK 1 Dead-Time @ 100%(ms)		1.000

INJECTOR SMALL PULSEWIDTHS						
New (ms)	0.000	0.784	1.041	1.360	1.654	2.000
Original (ms)	0.000	0.740	1.055	1.370	1.685	2.000

USE BELOW IF USING A PNP ECU

43.5 PSI / 3 BAR / 300 kPa

BATTERY OFFSET	
Voltage	Offset (ms)
6.0	2.380
8.0	1.820
10.0	1.346
12.0	0.958
14.0	0.657
16.0	0.442

58 PSI / 4 BAR / 400 kPa

BATTERY OFFSET	
Voltage	Offset (ms)
6.0	2.652
8.0	2.028
10.0	1.500
12.0	1.068
14.0	0.732
16.0	0.493



FUEL INJECTOR CHARACTERIZATION
EMTRON INJECTOR DATA 30592-1 & 30592-8

REF INJECTOR SIZE (Primary)	
Ref injector size (300 kPa)	542 cc/min
Ref injector size (400 kPa)	621 cc/min
Ref injector size (500 kPa)	695 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	2.380	1.868	1.321	0.934	0.660	0.467
	310.2	2.404	1.887	1.334	0.943	0.667	0.472
	344.7	2.503	1.965	1.389	0.982	0.695	0.491
	379.2	2.603	2.043	1.444	1.021	0.722	0.511
	413.7	2.702	2.120	1.499	1.060	0.750	0.530
	448.2	2.801	2.198	1.555	1.099	0.777	0.550
	482.7	2.900	2.276	1.610	1.138	0.805	0.569
	517.2	3.000	2.354	1.665	1.177	0.833	0.589
	551.7	3.099	2.432	1.720	1.216	0.860	0.608
	587.2	3.201	2.512	1.777	1.256	0.888	0.628
	620.7	3.297	2.588	1.830	1.294	0.915	0.647

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	0.385	0.304	0.222	0.140	0.042	-0.006	-0.011	-0.011	-0.031	-0.016	0.000	0.000	0.000	0.000	0.000



FUEL INJECTOR CHARACTERIZATION
MAXX ECU INJECTOR DATA 30592-1 & 30592-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)	542
MINIMUM PULSE WIDTH (ms)	0.644

INJECTOR DEAD TIME (ms)						
Voltage	8	10	12	14	16	18
Dead Time	1.868	1.321	0.934	0.660	0.467	0.314

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	0.385	0.304	0.222	0.140	0.076	0.042	0.011	-0.006	-0.016	-0.011	-0.009	-0.011	-0.024	-0.031	-0.026	-0.016	-0.006	0.000	0.000	0.000	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)	621
MINIMUM PULSE WIDTH (ms)	0.664

INJECTOR DEAD TIME (ms)						
Voltage	8	10	12	14	16	18
Dead Time	2.081	1.472	1.041	0.736	0.520	0.350

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	0.385	0.304	0.222	0.140	0.076	0.042	0.011	-0.006	-0.016	-0.011	-0.009	-0.011	-0.024	-0.031	-0.026	-0.016	-0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



FUEL INJECTOR CHARACTERIZATION
MOTEC INJECTOR DATA 30592-1 & 30592-8

RESISTANCE (Ω)	12.20 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)	9.30 ml/s
REF FLOW (400 kPa)	10.83 ml/s
REF FLOW (500 kPa)	12.17 ml/s
REF FLOW (600 kPa)	13.37 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	2.524	2.832	3.329	4.624
2.50	2.630	2.967	3.426	4.789
4.00	2.684	3.024	3.519	4.795
5.50	2.821	3.074	3.614	4.881
7.00	2.946	3.133	3.667	4.903
8.50	3.038	3.290	3.760	4.924
10.00	3.190	3.421	3.832	4.962
11.50	3.345	3.549	3.925	5.001
13.00	3.506	3.688	4.076	5.085
14.50	3.668	3.827	4.213	5.187
16.00	3.830	3.964	4.346	5.398
17.50	4.003	4.101	4.475	5.607
19.00	4.169	4.239	4.603	5.752
20.50	4.334	4.376	4.730	5.888
22.00	4.499	4.527	4.858	6.024
23.50	4.664	4.685	4.987	6.151
25.00	4.830	4.829	5.115	6.264
26.50	4.996	4.973	5.244	6.397
28.00	5.161	5.116	5.372	6.541
29.50	5.327	5.259	5.513	6.687

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	1.806	1.939	2.107	2.313
2.50	1.876	2.022	2.200	2.424
4.00	1.923	2.064	2.240	2.486
5.50	2.056	2.100	2.280	2.534
7.00	2.172	2.239	2.310	2.593
8.50	2.286	2.344	2.475	2.667
10.00	2.434	2.474	2.558	2.737
11.50	2.583	2.606	2.673	2.836
13.00	2.741	2.735	2.794	2.940
14.50	2.900	2.864	2.915	3.067
16.00	3.065	3.015	3.037	3.175
17.50	3.232	3.161	3.164	3.283
19.00	3.397	3.306	3.296	3.399
20.50	3.562	3.451	3.430	3.518
22.00	3.727	3.590	3.564	3.637
23.50	3.892	3.729	3.698	3.755
25.00	4.059	3.872	3.829	3.877
26.50	4.227	4.017	3.958	4.000
28.00	4.395	4.161	4.088	4.124
29.50	4.562	4.305	4.218	4.247

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	1.426	1.512	1.612	1.723
2.50	1.476	1.572	1.676	1.794
4.00	1.519	1.610	1.715	1.836
5.50	1.663	1.673	1.749	1.878
7.00	1.754	1.789	1.832	1.900
8.50	1.894	1.888	1.933	2.043
10.00	2.040	2.015	2.027	2.102
11.50	2.186	2.144	2.145	2.204
13.00	2.346	2.277	2.266	2.311
14.50	2.506	2.411	2.387	2.418
16.00	2.666	2.553	2.508	2.526
17.50	2.844	2.694	2.629	2.634
19.00	3.005	2.836	2.759	2.749
20.50	3.170	2.977	2.890	2.866
22.00	3.335	3.121	3.021	2.984
23.50	3.500	3.260	3.154	3.109
25.00	3.664	3.404	3.283	3.232
26.50	3.829	3.549	3.410	3.354
28.00	3.994	3.693	3.537	3.476
29.50	4.158	3.838	3.665	3.596



FUEL INJECTOR CHARACTERIZATION
MOTEC INJECTOR DATA 30592-1 & 30592-8
(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	1.182	1.245	1.316	1.391
2.50	1.228	1.296	1.364	1.442
4.00	1.266	1.335	1.399	1.478
5.50	1.414	1.410	1.434	1.515
7.00	1.493	1.509	1.536	1.535
8.50	1.634	1.606	1.623	1.686
10.00	1.782	1.732	1.712	1.743
11.50	1.931	1.858	1.827	1.848
13.00	2.093	1.991	1.944	1.957
14.50	2.254	2.124	2.071	2.065
16.00	2.416	2.267	2.199	2.173
17.50	2.588	2.409	2.326	2.281
19.00	2.751	2.551	2.455	2.396
20.50	2.913	2.693	2.584	2.513
22.00	3.079	2.830	2.713	2.629
23.50	3.250	2.968	2.842	2.746
25.00	3.413	3.116	2.959	2.868
26.50	3.576	3.261	3.083	2.993
28.00	3.740	3.406	3.213	3.113
29.50	3.903	3.551	3.342	3.231

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	1.011	1.062	1.118	1.173
2.50	1.079	1.135	1.171	1.274
4.00	1.092	1.147	1.233	1.287
5.50	1.219	1.211	1.245	1.293
7.00	1.308	1.313	1.330	1.298
8.50	1.445	1.401	1.397	1.430
10.00	1.592	1.519	1.493	1.504
11.50	1.747	1.643	1.606	1.601
13.00	1.917	1.778	1.723	1.709
14.50	2.069	1.923	1.842	1.813
16.00	2.231	2.064	1.969	1.924
17.50	2.421	2.192	2.097	2.043
19.00	2.583	2.342	2.216	2.163
20.50	2.736	2.514	2.344	2.276
22.00	2.895	2.652	2.493	2.382
23.50	3.058	2.780	2.631	2.516
25.00	3.224	2.913	2.748	2.638
26.50	3.385	3.060	2.856	2.749
28.00	3.546	3.208	2.975	2.859
29.50	3.707	3.346	3.101	2.963



FUEL INJECTOR CHARACTERIZATION
MOTEC INJECTOR DATA 30592-1 & 30592-8
(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	2.524	1.806	1.426	1.182	1.011
2.50	2.630	1.876	1.476	1.228	1.079
4.00	2.684	1.923	1.519	1.266	1.092
5.50	2.821	2.056	1.663	1.414	1.219
7.00	2.946	2.172	1.754	1.493	1.308
8.50	3.038	2.286	1.894	1.634	1.445
10.00	3.190	2.434	2.040	1.782	1.592
11.50	3.345	2.583	2.186	1.931	1.747
13.00	3.506	2.741	2.346	2.093	1.917
14.50	3.668	2.900	2.506	2.254	2.069
16.00	3.830	3.065	2.666	2.416	2.231
17.50	4.003	3.232	2.844	2.588	2.421
19.00	4.169	3.397	3.005	2.751	2.583
20.50	4.334	3.562	3.170	2.913	2.736
22.00	4.499	3.727	3.335	3.079	2.895
23.50	4.664	3.892	3.500	3.250	3.058
25.00	4.830	4.059	3.664	3.413	3.224
26.50	4.996	4.227	3.829	3.576	3.385
28.00	5.161	4.395	3.994	3.740	3.546
29.50	5.327	4.562	4.158	3.903	3.707

400 kPa

	8	10	12	14	15
1.00	2.832	1.939	1.512	1.245	1.062
2.50	2.967	2.022	1.572	1.296	1.135
4.00	3.024	2.064	1.610	1.335	1.147
5.50	3.074	2.100	1.673	1.410	1.211
7.00	3.133	2.239	1.789	1.509	1.313
8.50	3.290	2.344	1.888	1.606	1.401
10.00	3.421	2.474	2.015	1.732	1.519
11.50	3.549	2.606	2.144	1.858	1.643
13.00	3.688	2.735	2.277	1.991	1.778
14.50	3.827	2.864	2.411	2.124	1.923
16.00	3.964	3.015	2.553	2.267	2.064
17.50	4.101	3.161	2.694	2.409	2.192
19.00	4.239	3.306	2.836	2.551	2.342
20.50	4.376	3.451	2.977	2.693	2.514
22.00	4.527	3.590	3.121	2.830	2.652
23.50	4.685	3.729	3.260	2.968	2.780
25.00	4.829	3.872	3.404	3.116	2.913
26.50	4.973	4.017	3.549	3.261	3.060
28.00	5.116	4.161	3.693	3.406	3.208
29.50	5.259	4.305	3.838	3.551	3.346



FUEL INJECTOR CHARACTERIZATION
MOTEC INJECTOR DATA 30592-1 & 30592-8
(continued)

500 kPa

	8	10	12	14	15
1.00	3.329	2.107	1.612	1.316	1.118
2.50	3.426	2.200	1.676	1.364	1.171
4.00	3.519	2.240	1.715	1.399	1.233
5.50	3.614	2.280	1.749	1.434	1.245
7.00	3.667	2.310	1.832	1.536	1.330
8.50	3.760	2.475	1.933	1.623	1.397
10.00	3.832	2.558	2.027	1.712	1.493
11.50	3.925	2.673	2.145	1.827	1.606
13.00	4.076	2.794	2.266	1.944	1.723
14.50	4.213	2.915	2.387	2.071	1.842
16.00	4.346	3.037	2.508	2.199	1.969
17.50	4.475	3.164	2.629	2.326	2.097
19.00	4.603	3.296	2.759	2.455	2.216
20.50	4.730	3.430	2.890	2.584	2.344
22.00	4.858	3.564	3.021	2.713	2.493
23.50	4.987	3.698	3.154	2.842	2.631
25.00	5.115	3.829	3.283	2.959	2.748
26.50	5.244	3.958	3.410	3.083	2.856
28.00	5.372	4.088	3.537	3.213	2.975
29.50	5.513	4.218	3.665	3.342	3.101

600 kPa

	8	10	12	14	15
1.00	4.624	2.313	1.723	1.391	1.173
2.50	4.789	2.424	1.794	1.442	1.274
4.00	4.795	2.486	1.836	1.478	1.287
5.50	4.881	2.534	1.878	1.515	1.293
7.00	4.903	2.593	1.900	1.535	1.298
8.50	4.924	2.667	2.043	1.686	1.430
10.00	4.962	2.737	2.102	1.743	1.504
11.50	5.001	2.836	2.204	1.848	1.601
13.00	5.085	2.940	2.311	1.957	1.709
14.50	5.187	3.067	2.418	2.065	1.813
16.00	5.398	3.175	2.526	2.173	1.924
17.50	5.607	3.283	2.634	2.281	2.043
19.00	5.752	3.399	2.749	2.396	2.163
20.50	5.888	3.518	2.866	2.513	2.276
22.00	6.024	3.637	2.984	2.629	2.382
23.50	6.151	3.755	3.109	2.746	2.516
25.00	6.264	3.877	3.232	2.868	2.638
26.50	6.397	4.000	3.354	2.993	2.749
28.00	6.541	4.124	3.476	3.113	2.859
29.50	6.687	4.247	3.596	3.231	2.963

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



FUEL INJECTOR CHARACTERIZATION
FUELTECH INJECTOR DATA 30592-1 & 30592-8

43.5 PSI / 3 BAR / 300 kPa

INPUT AMOUNT OF CYLINDERS/ROTORS	4.00 Cyl/Rotors
PRIMARY/SECONDARY TOTAL FLOW	206.96 lb.hr
SINGLE INJECTOR FLOW	51.74 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	1.868	1.571	1.321	1.111	0.934	0.785	0.660	0.555	0.467

58 PSI / 4 BAR / 400 kPa

INPUT AMOUNT OF CYLINDERS/ROTORS	4.00 Cyl/Rotors
PRIMARY/SECONDARY TOTAL FLOW	237.40 lb.hr
SINGLE INJECTOR FLOW	59.35 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	2.081	1.750	1.472	1.238	1.041	0.875	0.736	0.619	0.520



FUEL INJECTOR CHARACTERIZATION
ACES INJECTOR DATA 30592-1 & 30592-8

43.5 PSI / 3 BAR / 300 kPa

RATED FLOW PER INJECTOR (mg/s):	6518.90
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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)	663.97	663.97	663.97	663.97	663.97	663.97	663.97	663.97

INJECTOR OFF TIME								
Voltage	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
Time(μs)	2379.87	2231.69	2088.92	1951.54	1819.56	1692.98	1571.80	1456.02



FUEL INJECTOR CHARACTERIZATION
UNIVERSAL INJECTOR DATA 30592-1 & 30592-8

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	390	466	542	582	621	695	772	849	925
Flowrate lb/hr	37.2	44.5	51.7	55.5	59.4	66.4	73.8	81.1	88.4
Flowrate g/s	4.69	5.61	6.52	7.00	7.48	8.36	9.29	10.21	11.14

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	2.288	2.654	3.027	3.373	3.758	4.118	4.484	4.850	5.215
	4.5	2.160	2.505	2.857	3.183	3.548	3.887	4.232	4.577	4.923
	5.0	2.036	2.361	2.692	3.000	3.343	3.663	3.989	4.314	4.640
	5.5	1.915	2.222	2.533	2.823	3.146	3.447	3.753	4.059	4.366
	6.0	1.799	2.087	2.380	2.652	2.955	3.238	3.526	3.813	4.101
	6.5	1.687	1.957	2.232	2.487	2.771	3.036	3.306	3.576	3.846
	7.0	1.579	1.832	2.089	2.328	2.594	2.842	3.095	3.347	3.600
	7.5	1.475	1.711	1.952	2.175	2.423	2.655	2.891	3.127	3.363
	8.0	1.376	1.596	1.820	2.028	2.260	2.476	2.696	2.916	3.136
	8.5	1.280	1.485	1.693	1.887	2.102	2.303	2.508	2.713	2.917
	9.0	1.188	1.378	1.572	1.752	1.952	2.138	2.328	2.519	2.709
	9.5	1.101	1.277	1.456	1.623	1.808	1.981	2.157	2.333	2.509
	10.0	1.017	1.180	1.346	1.500	1.671	1.831	1.993	2.156	2.319
	10.5	0.938	1.088	1.241	1.383	1.541	1.688	1.838	1.988	2.138
	11.0	0.863	1.001	1.141	1.272	1.417	1.552	1.690	1.828	1.966
	11.5	0.791	0.918	1.047	1.167	1.300	1.424	1.551	1.677	1.804
	12.0	0.724	0.840	0.958	1.068	1.190	1.303	1.419	1.535	1.651
	12.5	0.661	0.767	0.875	0.975	1.086	1.190	1.296	1.402	1.507
	13.0	0.602	0.699	0.797	0.888	0.989	1.084	1.180	1.277	1.373
	13.5	0.547	0.635	0.724	0.807	0.899	0.985	1.073	1.160	1.248
	14.0	0.497	0.576	0.657	0.732	0.816	0.894	0.973	1.053	1.132
	14.5	0.450	0.522	0.595	0.663	0.739	0.810	0.882	0.954	1.026
	15.0	0.407	0.472	0.539	0.600	0.669	0.733	0.798	0.863	0.928
	15.5	0.369	0.428	0.488	0.544	0.606	0.664	0.723	0.781	0.840
	16.0	0.334	0.388	0.442	0.493	0.549	0.602	0.655	0.708	0.762
	16.5	0.304	0.352	0.402	0.448	0.499	0.547	0.595	0.644	0.693
	17.0	0.278	0.322	0.367	0.409	0.456	0.499	0.544	0.588	0.633
	17.5	0.255	0.296	0.338	0.376	0.419	0.459	0.500	0.541	0.582
	18.0	0.237	0.275	0.314	0.350	0.390	0.427	0.465	0.503	0.541
	18.5	0.223	0.259	0.295	0.329	0.366	0.402	0.437	0.473	0.509
	19.0	0.213	0.247	0.282	0.314	0.350	0.384	0.418	0.452	0.486
	19.5	0.207	0.240	0.274	0.305	0.340	0.373	0.406	0.439	0.472
	20.0	0.197	0.229	0.261	0.291	0.324	0.355	0.386	0.418	0.449