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30302-1 & 30302-8

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FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30302-1 & 30302-8
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	2.785	2.802	2.818	2.835	2.852	2.869	2.885	2.902	2.919	2.936	2.952	2.969	2.986	3.003	3.019	3.036	3.053
5.0	2.540	2.556	2.571	2.586	2.601	2.617	2.632	2.647	2.663	2.678	2.693	2.708	2.724	2.739	2.754	2.770	2.785
5.5	2.317	2.331	2.345	2.359	2.373	2.387	2.401	2.415	2.429	2.443	2.457	2.471	2.485	2.499	2.512	2.526	2.540
6.0	2.114	2.126	2.139	2.152	2.165	2.177	2.190	2.203	2.216	2.228	2.241	2.254	2.266	2.279	2.292	2.305	2.317
6.5	1.928	1.940	1.951	1.963	1.975	1.986	1.998	2.009	2.021	2.033	2.044	2.056	2.067	2.079	2.091	2.102	2.114
7.0	1.759	1.769	1.780	1.791	1.801	1.812	1.822	1.833	1.843	1.854	1.865	1.875	1.886	1.896	1.907	1.918	1.928
7.5	1.604	1.614	1.624	1.633	1.643	1.653	1.662	1.672	1.682	1.691	1.701	1.711	1.720	1.730	1.740	1.749	1.759
8.0	1.463	1.472	1.481	1.490	1.499	1.508	1.516	1.525	1.534	1.543	1.552	1.560	1.569	1.578	1.587	1.596	1.604
8.5	1.335	1.343	1.351	1.359	1.367	1.375	1.383	1.391	1.399	1.407	1.415	1.423	1.431	1.439	1.447	1.455	1.463
9.0	1.218	1.225	1.232	1.240	1.247	1.254	1.262	1.269	1.276	1.284	1.291	1.298	1.306	1.313	1.320	1.328	1.335
9.5	1.111	1.117	1.124	1.131	1.138	1.144	1.151	1.158	1.164	1.171	1.178	1.184	1.191	1.198	1.204	1.211	1.218
10.0	1.013	1.019	1.025	1.032	1.038	1.044	1.050	1.056	1.062	1.068	1.074	1.080	1.086	1.093	1.099	1.105	1.111
10.5	0.924	0.930	0.935	0.941	0.947	0.952	0.958	0.963	0.969	0.974	0.980	0.985	0.991	0.997	1.002	1.008	1.013
11.0	0.843	0.848	0.853	0.858	0.863	0.868	0.874	0.879	0.884	0.889	0.894	0.899	0.904	0.909	0.914	0.919	0.924
11.5	0.769	0.774	0.778	0.783	0.788	0.792	0.797	0.801	0.806	0.811	0.815	0.820	0.825	0.829	0.834	0.838	0.843
12.0	0.702	0.706	0.710	0.714	0.718	0.723	0.727	0.731	0.735	0.740	0.744	0.748	0.752	0.756	0.761	0.765	0.769
12.5	0.640	0.644	0.648	0.651	0.655	0.659	0.663	0.667	0.671	0.675	0.678	0.682	0.686	0.690	0.694	0.698	0.702
13.0	0.584	0.587	0.591	0.594	0.598	0.601	0.605	0.608	0.612	0.615	0.619	0.622	0.626	0.629	0.633	0.636	0.640
13.5	0.532	0.536	0.539	0.542	0.545	0.548	0.552	0.555	0.558	0.561	0.565	0.568	0.571	0.574	0.577	0.581	0.584
14.0	0.486	0.489	0.492	0.494	0.497	0.500	0.503	0.506	0.509	0.512	0.515	0.518	0.521	0.524	0.527	0.530	0.532
14.5	0.443	0.446	0.448	0.451	0.454	0.456	0.459	0.462	0.464	0.467	0.470	0.472	0.475	0.478	0.480	0.483	0.486
15.0	0.404	0.407	0.409	0.411	0.414	0.416	0.419	0.421	0.424	0.426	0.428	0.431	0.433	0.436	0.438	0.441	0.443
15.5	0.369	0.371	0.373	0.375	0.378	0.380	0.382	0.384	0.386	0.389	0.391	0.393	0.395	0.398	0.400	0.402	0.404
16.0	0.336	0.338	0.340	0.342	0.344	0.346	0.348	0.350	0.352	0.355	0.357	0.359	0.361	0.363	0.365	0.367	0.369
16.5	0.307	0.309	0.310	0.312	0.314	0.316	0.318	0.320	0.322	0.323	0.325	0.327	0.329	0.331	0.333	0.334	0.336
17.0	0.280	0.282	0.283	0.285	0.287	0.288	0.290	0.292	0.293	0.295	0.297	0.298	0.300	0.302	0.303	0.305	0.307
17.5	0.255	0.257	0.258	0.260	0.261	0.263	0.264	0.266	0.268	0.269	0.271	0.272	0.274	0.275	0.277	0.278	0.280
18.0	0.233	0.234	0.236	0.237	0.238	0.240	0.241	0.243	0.244	0.245	0.247	0.248	0.250	0.251	0.252	0.254	0.255

*Pick which table that best fits in your ECU



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30302-1 & 30302-8
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	2.540	2.571	2.601	2.632	2.663	2.693	2.724	2.754	2.785	2.818	2.852	2.885	2.919	2.952	2.986	3.019	3.053
5.0	2.317	2.345	2.373	2.401	2.429	2.457	2.485	2.512	2.540	2.571	2.601	2.632	2.663	2.693	2.724	2.754	2.785
5.5	2.114	2.139	2.165	2.190	2.216	2.241	2.266	2.292	2.317	2.345	2.373	2.401	2.429	2.457	2.485	2.512	2.540
6.0	1.928	1.951	1.975	1.998	2.021	2.044	2.067	2.091	2.114	2.139	2.165	2.190	2.216	2.241	2.266	2.292	2.317
6.5	1.759	1.780	1.801	1.822	1.843	1.865	1.886	1.907	1.928	1.951	1.975	1.998	2.021	2.044	2.067	2.091	2.114
7.0	1.604	1.624	1.643	1.662	1.682	1.701	1.720	1.740	1.759	1.780	1.801	1.822	1.843	1.865	1.886	1.907	1.928
7.5	1.463	1.481	1.499	1.516	1.534	1.552	1.569	1.587	1.604	1.624	1.643	1.662	1.682	1.701	1.720	1.740	1.759
8.0	1.335	1.351	1.367	1.383	1.399	1.415	1.431	1.447	1.463	1.481	1.499	1.516	1.534	1.552	1.569	1.587	1.604
8.5	1.218	1.232	1.247	1.262	1.276	1.291	1.306	1.320	1.335	1.351	1.367	1.383	1.399	1.415	1.431	1.447	1.463
9.0	1.111	1.124	1.138	1.151	1.164	1.178	1.191	1.204	1.218	1.232	1.247	1.262	1.276	1.291	1.306	1.320	1.335
9.5	1.013	1.025	1.038	1.050	1.062	1.074	1.086	1.099	1.111	1.124	1.138	1.151	1.164	1.178	1.191	1.204	1.218
10.0	0.924	0.935	0.947	0.958	0.969	0.980	0.991	1.002	1.013	1.025	1.038	1.050	1.062	1.074	1.086	1.099	1.111
10.5	0.843	0.853	0.863	0.874	0.884	0.894	0.904	0.914	0.924	0.935	0.947	0.958	0.969	0.980	0.991	1.002	1.013
11.0	0.769	0.778	0.788	0.797	0.806	0.815	0.825	0.834	0.843	0.853	0.863	0.874	0.884	0.894	0.904	0.914	0.924
11.5	0.702	0.710	0.718	0.727	0.735	0.744	0.752	0.761	0.769	0.778	0.788	0.797	0.806	0.815	0.825	0.834	0.843
12.0	0.640	0.648	0.655	0.663	0.671	0.678	0.686	0.694	0.702	0.710	0.718	0.727	0.735	0.744	0.752	0.761	0.769
12.5	0.584	0.591	0.598	0.605	0.612	0.619	0.626	0.633	0.640	0.648	0.655	0.663	0.671	0.678	0.686	0.694	0.702
13.0	0.532	0.539	0.545	0.552	0.558	0.565	0.571	0.577	0.584	0.591	0.598	0.605	0.612	0.619	0.626	0.633	0.640
13.5	0.486	0.492	0.497	0.503	0.509	0.515	0.521	0.527	0.532	0.539	0.545	0.552	0.558	0.565	0.571	0.577	0.584
14.0	0.443	0.448	0.454	0.459	0.464	0.470	0.475	0.480	0.486	0.492	0.497	0.503	0.509	0.515	0.521	0.527	0.532
14.5	0.404	0.409	0.414	0.419	0.424	0.428	0.433	0.438	0.443	0.448	0.454	0.459	0.464	0.470	0.475	0.480	0.486
15.0	0.369	0.373	0.378	0.382	0.386	0.391	0.395	0.400	0.404	0.409	0.414	0.419	0.424	0.428	0.433	0.438	0.443
15.5	0.336	0.340	0.344	0.348	0.352	0.357	0.361	0.365	0.369	0.373	0.378	0.382	0.386	0.391	0.395	0.400	0.404
16.0	0.307	0.310	0.314	0.318	0.322	0.325	0.329	0.333	0.336	0.340	0.344	0.348	0.352	0.357	0.361	0.365	0.369
16.5	0.280	0.283	0.287	0.290	0.293	0.297	0.300	0.303	0.307	0.310	0.314	0.318	0.322	0.325	0.329	0.333	0.336
17.0	0.255	0.258	0.261	0.264	0.268	0.271	0.274	0.277	0.280	0.283	0.287	0.290	0.293	0.297	0.300	0.303	0.307
17.5	0.233	0.236	0.238	0.241	0.244	0.247	0.250	0.252	0.255	0.258	0.261	0.264	0.268	0.271	0.274	0.277	0.280
18.0	0.212	0.215	0.218	0.220	0.223	0.225	0.228	0.230	0.233	0.236	0.238	0.241	0.244	0.247	0.250	0.252	0.255
18.5	0.194	0.196	0.198	0.201	0.203	0.205	0.208	0.210	0.212	0.215	0.218	0.220	0.223	0.225	0.228	0.230	0.233
19.0	0.177	0.179	0.181	0.183	0.185	0.187	0.189	0.192	0.194	0.196	0.198	0.201	0.203	0.205	0.208	0.210	0.212
19.5	0.161	0.163	0.165	0.167	0.169	0.171	0.173	0.175	0.177	0.179	0.181	0.183	0.185	0.187	0.189	0.192	0.194
20.0	0.147	0.149	0.151	0.152	0.154	0.156	0.158	0.159	0.161	0.163	0.165	0.167	0.169	0.171	0.173	0.175	0.177
20.5	0.134	0.136	0.137	0.139	0.141	0.142	0.144	0.145	0.147	0.149	0.151	0.152	0.154	0.156	0.158	0.159	0.161

*Pick which table that best fits in your ECU



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30302-1 & 30302-8
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	1.965	1.980	1.996	2.014	2.030	2.046	2.061	2.080	2.095	2.111	2.127	2.145	2.161	2.176	2.192	2.210	2.226	2.242	2.257	2.276	2.291	2.307	2.325	2.341	2.356	2.372	2.390	2.406	2.422	2.437	2.456	2.471	2.487
5.0	1.848	1.863	1.878	1.895	1.910	1.924	1.939	1.956	1.971	1.986	2.000	2.018	2.032	2.047	2.062	2.079	2.094	2.108	2.123	2.140	2.155	2.170	2.187	2.202	2.217	2.231	2.249	2.263	2.278	2.293	2.310	2.325	2.339
5.5	1.735	1.749	1.763	1.779	1.793	1.807	1.821	1.837	1.851	1.865	1.878	1.895	1.908	1.922	1.936	1.952	1.966	1.980	1.994	2.010	2.024	2.038	2.054	2.068	2.081	2.095	2.111	2.125	2.139	2.153	2.169	2.183	2.197
6.0	1.627	1.640	1.653	1.668	1.681	1.694	1.707	1.722	1.735	1.748	1.761	1.776	1.789	1.802	1.815	1.830	1.843	1.856	1.869	1.884	1.897	1.910	1.925	1.938	1.951	1.964	1.979	1.992	2.005	2.018	2.033	2.046	2.059
6.5	1.522	1.534	1.546	1.560	1.572	1.584	1.597	1.611	1.623	1.635	1.647	1.661	1.673	1.686	1.698	1.712	1.724	1.736	1.748	1.762	1.775	1.787	1.801	1.813	1.825	1.837	1.851	1.864	1.876	1.888	1.902	1.914	1.926
7.0	1.421	1.432	1.443	1.457	1.468	1.479	1.491	1.504	1.515	1.526	1.538	1.551	1.562	1.574	1.585	1.598	1.610	1.621	1.632	1.645	1.657	1.668	1.681	1.693	1.704	1.715	1.729	1.740	1.751	1.763	1.776	1.787	1.798
7.5	1.324	1.334	1.345	1.357	1.368	1.378	1.389	1.401	1.412	1.422	1.433	1.445	1.456	1.466	1.477	1.489	1.500	1.510	1.521	1.533	1.544	1.554	1.566	1.577	1.588	1.598	1.610	1.621	1.632	1.642	1.654	1.665	1.676
8.0	1.230	1.240	1.250	1.262	1.271	1.281	1.291	1.302	1.312	1.322	1.332	1.343	1.353	1.363	1.373	1.384	1.394	1.404	1.414	1.425	1.435	1.445	1.456	1.466	1.476	1.486	1.497	1.507	1.517	1.527	1.538	1.548	1.558
8.5	1.141	1.150	1.159	1.170	1.179	1.188	1.197	1.208	1.217	1.226	1.235	1.246	1.255	1.264	1.273	1.284	1.293	1.302	1.311	1.322	1.331	1.340	1.351	1.360	1.369	1.378	1.388	1.398	1.407	1.416	1.426	1.436	1.445
9.0	1.056	1.064	1.073	1.083	1.091	1.099	1.108	1.118	1.126	1.134	1.143	1.153	1.161	1.170	1.178	1.188	1.196	1.205	1.213	1.223	1.231	1.240	1.250	1.258	1.266	1.275	1.285	1.293	1.302	1.310	1.320	1.328	1.337
9.5	0.974	0.982	0.990	0.999	1.007	1.015	1.022	1.031	1.039	1.047	1.055	1.064	1.072	1.079	1.087	1.096	1.104	1.112	1.120	1.129	1.136	1.144	1.153	1.161	1.169	1.177	1.186	1.193	1.201	1.209	1.218	1.226	1.234
10.0	0.897	0.904	0.911	0.920	0.927	0.934	0.941	0.949	0.957	0.964	0.971	0.979	0.986	0.994	1.001	1.009	1.016	1.023	1.031	1.039	1.046	1.053	1.062	1.069	1.076	1.083	1.091	1.098	1.106	1.113	1.121	1.128	1.135
10.5	0.823	0.830	0.837	0.844	0.851	0.857	0.864	0.872	0.878	0.885	0.891	0.899	0.905	0.912	0.919	0.926	0.933	0.939	0.946	0.954	0.960	0.967	0.974	0.981	0.988	0.994	1.002	1.008	1.015	1.021	1.029	1.036	1.042
11.0	0.754	0.760	0.766	0.773	0.779	0.785	0.791	0.798	0.804	0.810	0.816	0.823	0.829	0.835	0.841	0.848	0.854	0.860	0.866	0.873	0.879	0.885	0.892	0.898	0.904	0.910	0.917	0.923	0.929	0.935	0.942	0.948	0.954
11.5	0.688	0.693	0.699	0.705	0.711	0.716	0.722	0.728	0.734	0.739	0.745	0.751	0.757	0.762	0.768	0.774	0.779	0.785	0.790	0.797	0.802	0.808	0.814	0.820	0.825	0.831	0.837	0.842	0.848	0.853	0.860	0.865	0.871
12.0	0.626	0.631	0.636	0.642	0.647	0.652	0.657	0.663	0.668	0.673	0.678	0.684	0.689	0.694	0.699	0.704	0.709	0.714	0.719	0.725	0.730	0.735	0.741	0.746	0.751	0.756	0.762	0.767	0.772	0.777	0.783	0.788	0.793
12.5	0.568	0.573	0.577	0.583	0.587	0.592	0.596	0.601	0.606	0.610	0.615	0.620	0.625	0.629	0.634	0.639	0.644	0.648	0.653	0.658	0.663	0.667	0.672	0.677	0.681	0.686	0.691	0.696	0.700	0.705	0.710	0.715	0.719
13.0	0.514	0.518	0.522	0.527	0.531	0.535	0.539	0.544	0.548	0.552	0.557	0.561	0.565	0.570	0.574	0.578	0.582	0.587	0.591	0.595	0.600	0.604	0.608	0.613	0.617	0.621	0.626	0.630	0.634	0.638	0.643	0.647	0.651
13.5	0.464	0.468	0.471	0.476	0.479	0.483	0.487	0.491	0.495	0.499	0.502	0.507	0.510	0.514	0.518	0.522	0.526	0.529	0.533	0.537	0.541	0.545	0.549	0.553	0.557	0.560	0.565	0.568	0.572	0.576	0.580	0.584	0.587
14.0	0.418	0.421	0.425	0.428	0.432	0.435	0.438	0.442	0.446	0.449	0.452	0.456	0.459	0.463	0.466	0.470	0.473	0.477	0.480	0.484	0.487	0.491	0.494	0.498	0.501	0.504	0.508	0.512	0.515	0.518	0.522	0.526	0.529
14.5	0.376	0.379	0.382	0.385	0.388	0.391	0.394	0.398	0.401	0.404	0.407	0.410	0.413	0.416	0.419	0.422	0.425	0.428	0.431	0.435	0.438	0.441	0.444	0.447	0.450	0.453	0.457	0.460	0.463	0.466	0.469	0.472	0.475
15.0	0.337	0.340	0.343	0.346	0.348	0.351	0.354	0.357	0.360	0.362	0.365	0.368	0.371	0.373	0.376	0.379	0.382	0.385	0.387	0.391	0.393	0.396	0.399	0.402	0.404	0.407	0.410	0.413	0.416	0.418	0.421	0.424	0.427
15.5	0.303	0.305	0.308	0.310	0.313	0.315	0.318	0.320	0.323	0.325	0.328	0.330	0.333	0.335	0.338	0.341	0.343	0.345	0.348	0.351	0.353	0.355	0.358	0.361	0.363	0.366	0.368	0.371	0.373	0.376	0.378	0.381	0.383
16.0	0.272	0.274	0.277	0.279	0.281	0.283	0.286	0.288	0.290	0.292	0.295	0.297	0.299	0.301	0.304	0.306	0.308	0.311	0.313	0.315	0.317	0.320	0.322	0.324	0.326	0.329	0.331	0.333	0.335	0.338	0.340	0.342	0.345
16.5	0.246	0.248	0.249	0.252	0.254	0.256	0.258	0.260	0.262	0.264	0.266	0.268	0.270	0.272	0.274	0.276	0.278	0.280	0.282	0.284	0.286	0.288	0.291	0.293	0.295	0.296	0.299	0.301	0.303	0.305	0.307	0.309	0.311
17.0	0.223	0.225	0.226	0.228	0.230	0.232	0.234	0.236	0.238	0.239	0.241	0.243	0.245	0.247	0.249	0.251	0.252	0.254	0.256	0.258	0.260	0.262	0.264	0.265	0.267	0.269	0.271	0.273	0.275	0.276	0.279	0.280	



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30302-1 & 30302-8
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	2.114	2.185	2.256	2.327	2.398	2.469	2.540	2.604	2.669	2.733	2.797	2.861	2.925	2.989	3.053	3.130	3.207	3.284	3.361	3.438	3.515	3.592	3.669	3.762	3.854	3.947	4.039	4.132	4.224	4.317	4.410	4.410	4.410
5.0	1.759	1.818	1.877	1.936	1.995	2.055	2.114	2.167	2.220	2.274	2.327	2.380	2.434	2.487	2.540	2.604	2.669	2.733	2.797	2.861	2.925	2.989	3.053	3.130	3.207	3.284	3.361	3.438	3.515	3.592	3.669	3.669	3.669
6.0	1.463	1.513	1.562	1.611	1.660	1.710	1.759	1.803	1.848	1.892	1.936	1.981	2.025	2.069	2.114	2.167	2.220	2.274	2.327	2.380	2.434	2.487	2.540	2.604	2.669	2.733	2.797	2.861	2.925	2.989	3.053	3.053	3.053
7.0	1.218	1.259	1.300	1.341	1.382	1.423	1.463	1.500	1.537	1.574	1.611	1.648	1.685	1.722	1.759	1.803	1.848	1.892	1.936	1.981	2.025	2.069	2.114	2.167	2.220	2.274	2.327	2.380	2.434	2.487	2.540	2.540	2.540
8.0	1.013	1.047	1.081	1.116	1.150	1.184	1.218	1.248	1.279	1.310	1.341	1.371	1.402	1.433	1.463	1.500	1.537	1.574	1.611	1.648	1.685	1.722	1.759	1.803	1.848	1.892	1.936	1.981	2.025	2.069	2.114	2.114	2.114
9.0	0.843	0.871	0.900	0.928	0.957	0.985	1.013	1.039	1.064	1.090	1.116	1.141	1.167	1.192	1.218	1.248	1.279	1.310	1.341	1.371	1.402	1.433	1.463	1.500	1.537	1.574	1.611	1.648	1.685	1.722	1.759	1.759	1.759
10.0	0.702	0.725	0.749	0.772	0.796	0.820	0.843	0.864	0.886	0.907	0.928	0.949	0.971	0.992	1.013	1.039	1.064	1.090	1.116	1.141	1.167	1.192	1.218	1.248	1.279	1.310	1.341	1.371	1.402	1.433	1.463	1.463	1.463
11.0	0.584	0.603	0.623	0.643	0.662	0.682	0.702	0.719	0.737	0.755	0.772	0.790	0.808	0.825	0.843	0.864	0.886	0.907	0.928	0.949	0.971	0.992	1.013	1.039	1.064	1.090	1.116	1.141	1.167	1.192	1.218	1.218	1.218
12.0	0.486	0.502	0.518	0.535	0.551	0.567	0.584	0.598	0.613	0.628	0.643	0.657	0.672	0.687	0.702	0.719	0.737	0.755	0.772	0.790	0.808	0.825	0.843	0.864	0.886	0.907	0.928	0.949	0.971	0.992	1.013	1.013	1.013
13.0	0.404	0.418	0.431	0.445	0.459	0.472	0.486	0.498	0.510	0.522	0.535	0.547	0.559	0.571	0.584	0.598	0.613	0.628	0.643	0.657	0.672	0.687	0.702	0.719	0.737	0.755	0.772	0.790	0.808	0.825	0.843	0.843	0.843
14.0	0.336	0.348	0.359	0.370	0.382	0.393	0.404	0.414	0.425	0.435	0.445	0.455	0.465	0.476	0.486	0.498	0.510	0.522	0.535	0.547	0.559	0.571	0.584	0.598	0.613	0.628	0.643	0.657	0.672	0.687	0.702	0.702	0.702
15.0	0.280	0.289	0.299	0.308	0.317	0.327	0.336	0.345	0.353	0.362	0.370	0.379	0.387	0.396	0.404	0.414	0.425	0.435	0.445	0.455	0.465	0.476	0.486	0.498	0.510	0.522	0.535	0.547	0.559	0.571	0.584	0.584	0.584
16.0	0.233	0.241	0.248	0.256	0.264	0.272	0.280	0.287	0.294	0.301	0.308	0.315	0.322	0.329	0.336	0.345	0.353	0.362	0.370	0.379	0.387	0.396	0.404	0.414	0.425	0.435	0.445	0.455	0.465	0.476	0.486	0.486	0.486
17.0	0.194	0.200	0.207	0.213	0.220	0.226	0.233	0.239	0.245	0.250	0.256	0.262	0.268	0.274	0.280	0.287	0.294	0.301	0.308	0.315	0.322	0.329	0.336	0.345	0.353	0.362	0.370	0.379	0.387	0.396	0.404	0.404	0.404
18.0	0.161	0.167	0.172	0.177	0.183	0.188	0.194	0.199	0.204	0.208	0.213	0.218	0.223	0.228	0.233	0.239	0.245	0.250	0.256	0.262	0.268	0.274	0.280	0.287	0.294	0.301	0.308	0.315	0.322	0.329	0.336	0.336	0.336
19.0	0.134	0.139	0.143	0.148	0.152	0.157	0.161	0.165	0.169	0.173	0.177	0.182	0.186	0.190	0.194	0.199	0.204	0.208	0.213	0.218	0.223	0.228	0.233	0.239	0.245	0.250	0.256	0.262	0.268	0.274	0.280	0.280	0.280
20.0	0.112	0.115	0.119	0.123	0.127	0.130	0.134	0.138	0.141	0.144	0.148	0.151	0.154	0.158	0.161	0.165	0.169	0.173	0.177	0.182	0.186	0.190	0.194	0.199	0.204	0.208	0.213	0.218	0.223	0.228	0.233	0.233	0.233

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	2.114	2.176	2.237	2.299	2.361	2.423	2.485	2.540	2.589	2.637	2.685	2.734	2.782	2.830	2.879	2.937	2.995	3.053	3.109	3.165	3.221	3.277	3.333	3.400	3.467	3.535	3.602	3.669	3.916	4.163	4.410	4.410	4.410
5.0	1.759	1.810	1.862	1.913	1.965	2.016	2.067	2.114	2.154	2.194	2.234	2.275	2.315	2.355	2.395	2.444	2.492	2.540	2.587	2.633	2.680	2.727	2.773	2.829	2.885	2.941	2.997	3.053	3.258	3.464	3.669	3.669	3.669
6.0	1.463	1.506	1.549	1.592	1.635	1.677	1.720	1.759	1.792	1.826	1.859	1.893	1.926	1.960	1.993	2.033	2.074	2.114	2.153	2.191	2.230	2.269	2.308	2.354	2.401	2.447	2.494	2.540	2.711	2.882	3.053	3.053	3.053
7.0	1.218	1.253	1.289	1.325	1.360	1.396	1.431	1.463	1.491	1.519	1.547	1.575	1.603	1.631	1.658	1.692	1.725	1.759	1.791	1.823	1.856	1.888	1.920	1.959	1.998	2.036	2.075	2.114	2.256	2.398	2.540	2.540	2.540
8.0	1.013	1.043	1.073	1.102	1.132	1.161	1.191	1.218	1.241	1.264	1.287	1.310	1.334	1.357	1.380	1.408	1.436	1.463	1.490	1.517	1.544	1.571	1.598	1.630	1.662	1.694	1.727	1.759	1.877	1.995	2.114	2.114	2.114
9.0	0.843	0.868	0.892	0.917	0.942	0.966	0.991	1.013	1.033	1.052	1.071	1.090	1.110	1.129	1.148	1.171	1.195	1.218	1.240	1.262	1.285	1.307	1.329	1.356	1.383	1.410	1.437	1.463	1.562	1.660	1.759	1.759	1.759
10.0	0.702	0.722	0.743	0.763	0.784	0.804	0.825	0.843	0.859	0.875	0.891	0.907	0.923	0.939	0.955	0.975	0.994	1.013	1.032	1.050	1.069	1.088	1.106	1.128	1.151	1.173	1.195	1.218	1.300	1.382	1.463	1.463	1.463
11.0	0.584	0.601	0.618	0.635	0.652	0.669	0.686	0.702	0.715	0.728	0.742	0.755	0.768	0.782	0.795	0.811	0.827	0.843	0.859	0.874	0.889	0.905	0.920	0.939	0.958	0.976	0.995	1.013	1.081	1.150	1.218	1.218	1.218
12.0	0.486	0.500	0.514	0.528	0.543	0.557	0.571	0.584	0.595	0.606	0.617	0.628	0.639	0.650	0.661	0.675	0.688	0.702	0.714	0.727	0.740	0.753	0.766	0.781	0.797	0.812	0.828	0.843	0.900	0.957	1.013	1.013	1.013
13.0	0.404	0.416	0.428	0.440	0.451	0.463	0.475	0.486	0.495	0.504	0.513	0.523	0.532	0.541	0.550	0.562	0.573	0.584	0.594	0.605	0.616	0.627	0.637	0.650	0.663	0.676	0.689	0.702	0.749	0.796	0.843	0.843	0.843
14.0	0.336	0.346	0.356	0.366	0.376	0.385	0.395	0.404	0.412	0.420	0.427	0.435	0.443	0.450	0.458	0.467	0.476	0.486	0.495	0.504	0.512	0.521	0.530	0.541	0.552	0.562	0.573	0.584	0.623	0.662	0.702	0.702	0.702
15.0	0.280	0.288	0.296	0.304	0.313	0.321	0.329	0.336	0.343	0.349	0.355	0.362	0.368	0.375	0.381	0.389	0.396	0.404	0.412	0.419	0.426	0.434	0.441	0.450	0.459	0.468	0.477	0.486	0.518	0.551	0.584	0.584	0.584
16.0	0.233	0.240	0.246	0.253	0.260	0.267	0.274	0.280	0.285	0.290	0.296	0.301	0.306	0.312	0.317	0.323	0.330	0.336	0.342	0.349	0.355	0.361	0.367	0.375	0.382	0.389	0.397	0.404	0.431	0.459	0.486	0.486	0.486
17.0	0.194	0.199	0.205	0.211	0.216	0.222	0.228	0.233	0.237	0.242	0.246	0.251	0.255	0.259	0.264	0.269	0.274	0.280	0.285	0.290	0.295	0.300	0.305	0.312	0.318	0.324	0.330	0.336	0.359	0.382	0.404	0.404	0.404
18.0	0.161	0.166	0.171	0.175	0.180	0.185	0.189	0.194	0.197	0.201	0.205	0.208	0.212	0.216	0.220	0.224	0.228	0.233	0.237	0.241	0.246	0.250	0.254	0.259	0.264	0.270	0.275	0.280	0.299	0.317	0.336	0.336	0.336
19.0	0.134	0.138	0.142	0.146	0.150	0.154	0.158	0.161	0.164	0.167	0.170	0.173	0.177	0.180	0.183	0.186	0.190	0.194	0.197	0.201	0.204	0.208	0.211	0.216	0.220	0.224	0.229	0.233	0.248	0.264	0.280	0.280	0.280
20.0	0.112	0.115	0.118	0.121	0.125	0.128	0.131	0.134	0.137	0.139	0.142	0.144	0.147	0.149	0.152	0.155	0.158	0.161	0.164	0.167	0.170	0.173	0.176	0.180	0.183	0.187	0.190	0.194	0.207	0.220	0.233	0.233	0.233



FUEL INJECTOR CHARACTERIZATION
GM INJECTOR DATA 30302-1 & 30302-8
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)	29.8	30.0	30.2	30.4	30.5	30.7	30.9	31.1	31.3	31.4	31.6	31.8	32.0	32.1	32.3	32.5	32.7
Scaled Flow Rate (lb/hr)	14.9	15.0	15.1	15.2	15.3	15.4	15.5	15.5	15.6	15.7	15.8	15.9	16.0	16.1	16.2	16.2	16.3

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)	26.7	27.1	27.5	27.9	28.3	28.7	29.1	29.4	29.8	30.2	30.5	30.9	31.3	31.6	32.0	32.3	32.7
Scaled Flow Rate (lb/hr)	13.3	13.5	13.7	13.9	14.1	14.3	14.5	14.7	14.9	15.1	15.3	15.5	15.6	15.8	16.0	16.2	16.3

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)	25.3	25.5	25.7	26.0	26.2	26.4	26.7	26.9	27.1	27.4	27.6	27.8	28.1	28.3	28.5	29.0	29.2	29.4	29.7	29.9	30.1	30.4	30.6	30.8	31.0	31.3	31.5	31.7	31.9	32.2	32.4
Scaled Flow Rate (lb/hr)	12.7	12.8	12.9	13.0	13.1	13.2	13.3	13.5	13.6	13.7	13.8	13.9	14.0	14.1	14.2	14.5	14.6	14.7	14.8	14.9	15.1	15.2	15.3	15.4	15.5	15.6	15.8	15.9	16.0	16.1	16.2

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)	16.9	18.1	19.3	20.4	21.5	22.5	23.5	24.4	25.3	26.2	27.0	27.8	28.6	29.4	30.1	30.8	31.5	32.2	32.9	33.6	34.2	34.9	35.5	36.1	36.7	37.3	37.9	38.5	39.1	39.7	40.2	40.8	41.3
Scaled Flow Rate (lb/hr)	8.4	9.1	9.7	10.2	10.7	11.3	11.7	12.2	12.6	13.1	13.5	13.9	14.3	14.7	15.1	15.4	15.8	16.1	16.5	16.8	17.1	17.4	17.8	18.1	18.4	18.7	19.0	19.3	19.5	19.8	20.1	20.4	20.7

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)	16.9	17.9	18.9	19.8	20.7	21.5	22.3	23.1	23.8	24.6	25.3	26.0	26.7	27.3	28.0	28.6	29.2	29.8	30.4	31.0	31.5	32.1	32.7	33.2	33.7	34.2	34.8	35.3	35.8	36.3	36.7	37.2	37.7
Scaled Flow Rate (lb/hr)	8.4	8.9	9.4	9.9	10.3	10.7	11.2	11.5	11.9	12.3	12.6	13.0	13.3	13.7	14.0	14.3	14.6	14.9	15.2	15.5	15.8	16.1	16.3	16.6	16.9	17.1	17.4	17.6	17.9	18.1	18.4	18.6	18.9

*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%	50%
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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	0.501	0.459	0.417	0.375	0.333	0.291	0.249	0.207	0.164	0.122	0.089	0.075	0.060	0.046	0.031	0.020	0.009	-0.002	-0.012	-0.013	-0.013	-0.014	-0.012	-0.009	-0.006	-0.006	-0.008	-0.010	-0.012	-0.012	-0.013	-0.013	-0.019

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	-0.022	-0.022	-0.017	-0.013	-0.008	-0.003	0.003	0.007	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.003	0.003	0.002	0.002	0.001	0.001	0.001	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	0.457	0.370	0.284	0.197	0.111	0.070	0.040	0.015	-0.007	-0.013	-0.013	-0.007	-0.007	-0.011	-0.013	-0.015	-0.021	-0.017	-0.008	0.004	0.007	0.006	0.005	0.004	0.003	0.002	0.001	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	0.474	0.335	0.266	0.197	0.128	0.058	0.034	0.015	-0.003	-0.013	-0.012	-0.007	-0.006	-0.012	-0.013	-0.015	-0.020	-0.014	-0.006	0.007	0.006	0.002	0.002	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	0.714
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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	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000
Minimum Inj. PW	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143	0.7143

*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 30302-1 & 30302-8
For 2011+ applications, for older applications scroll down.

FLOW RATE	
Fuel Injector Breakpoint (lb)	0.0000088
Fuel Injector Hi Slope (lb/sec)	0.0082790
Fuel Injector Low Slope (lb/sec)	0.0104829
Fuel Injector Minimum Pulse Width (sec)	0.0005151
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	2.1138
7.0	1.7588
8.0	1.4635
9.0	1.2177
10.0	1.0133
11.0	0.8431
12.0	0.7015
13.0	0.5837
13.5	0.5325
14.0	0.4857
14.5	0.4431
15.0	0.4042

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 Pressure	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)	0.0000075
Fuel Injector Hi Slope (lb/sec)	0.0069156
Fuel Injector Low Slope (lb/sec)	0.0087565
Fuel Injector Minimum Pulse Width (sec)	0.0005151
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	1.6005
8.0	1.2107
10.0	0.8826
11.0	0.7416
12.0	0.6161
13.0	0.5059
14.0	0.4111
15.0	0.3318

FLOW RATE LOW MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1970	1.0000
54.96	1.1501	1.0000
50.03	1.1039	1.0000
39.15	1.0000	1.0000
30.02	0.9175	1.0000
20.01	0.8244	1.0000

FLOW RATE HIGH MULT VS. PRESSURE		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1970	1.0000
54.96	1.1501	1.0000
50.03	1.1039	1.0000
39.15	1.0000	1.0000
30.02	0.9175	1.0000
20.01	0.8244	1.0000

BREAKPOINT MULT		
Fuel System Type DeltaP	Factory Multiplier	Return Multiplier
60.03	1.1970	1.0000
54.96	1.1501	1.0000
50.03	1.1039	1.0000
39.15	1.0000	1.0000
30.02	0.9175	1.0000
20.01	0.8244	1.0000

OFFSET MULT VS. PRESSURE		
Fuel System Type Pressure	Factory Multiplier	Return Multiplier
60.03	1.1970	1.0000
54.96	1.1501	1.0000
50.03	1.1039	1.0000
39.15	1.0000	1.0000
30.02	0.9175	1.0000
20.01	0.8244	1.0000



FUEL INJECTOR CHARACTERIZATION
DODGE/CHRYSLER/JEEP INJECTOR DATA 30302-1 & 30302-8

INJECTOR PULSE WIDTH (ms)	FUEL MASS (Grams)
0.000	0.00000
0.515	0.00244
0.715	0.00342
0.915	0.00434
1.115	0.00509
1.315	0.00581
1.515	0.00659
1.715	0.00735
1.915	0.00814
2.115	0.00884
2.315	0.00952
3.315	0.01329
9.315	0.03582
49.315	0.18604

INJECTOR MIN PW	0.515
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START UP SCALER	3.755
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IGNITION VOLTAGE (all in ms)									
KPa	6	7	8	10	12	14	15.8	15.8	15.8
0	2.334	1.984	1.687	1.235	0.925	0.708	0.575	0.575	0.575
20	2.383	2.025	1.721	1.259	0.941	0.720	0.583	0.583	0.583
40	2.434	2.066	1.756	1.283	0.958	0.731	0.592	0.592	0.592
80	2.538	2.153	1.828	1.333	0.993	0.755	0.609	0.609	0.609
100	2.591	2.198	1.865	1.359	1.010	0.767	0.618	0.618	0.618

IGNITION VOLTAGE (all in ms)									
KPa	8	9.5	11	12	12.8	13.5	14	14.7	15.5
-80	1.558	1.237	0.993	0.863	0.780	0.709	0.666	0.609	0.559
0	1.687	1.335	1.067	0.925	0.834	0.756	0.708	0.647	0.592
40	1.756	1.387	1.107	0.958	0.863	0.781	0.731	0.667	0.609
62	1.795	1.417	1.129	0.977	0.879	0.795	0.744	0.678	0.619
84	1.835	1.447	1.153	0.996	0.896	0.810	0.758	0.689	0.629

IGNITION VOLTAGE (all in ms)									
KPa	5	6	7	8	9	10.1	12.1	14.1	15.8
250	2.360	2.000	1.705	1.455	1.248	1.065	0.807	0.628	0.520
300	2.487	2.105	1.793	1.528	1.308	1.115	0.842	0.651	0.537
400	2.762	2.334	1.984	1.687	1.440	1.224	0.917	0.704	0.575
500	3.071	2.591	2.198	1.865	1.589	1.346	1.001	0.762	0.618
550	3.240	2.731	2.315	1.962	1.669	1.412	1.047	0.794	0.641

IGNITION VOLTAGE (all in ms)									
KPa	5	6	7	8	9	10.1	12.1	14.1	15.8
130	2.085	1.771	1.514	1.297	1.116	0.957	0.732	0.575	0.481
244	2.345	1.988	1.695	1.447	1.241	1.060	0.803	0.625	0.517
400	2.762	2.334	1.984	1.687	1.440	1.224	0.917	0.704	0.575
586	3.367	2.837	2.403	2.036	1.730	1.462	1.082	0.818	0.659
660	3.646	3.069	2.596	2.197	1.864	1.572	1.158	0.871	0.698

IGNITION VOLTAGE (all in ms)									
KPa	5	5.7	6.3	7	8	10	12	14	15.8
8	2.762	2.441	2.247	1.984	1.687	1.235	0.925	0.708	0.575
80	2.994	2.644	2.431	2.144	1.828	1.333	0.993	0.755	0.609
117	3.155	2.785	2.560	2.198	1.865	1.359	1.010	0.767	0.618
150	3.240	2.858	2.627	2.315	1.962	1.412	1.047	0.794	0.641
200	3.370	2.972	2.731	2.405	2.037	1.732	1.463	1.083	0.819

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



FUEL INJECTOR CHARACTERIZATION
HONDA/ACURA INJECTOR DATA 30302-1 & 30302-8

2002 AND NEWER		INJECTOR FLOW	
3.5 BAR, 350 KPa, 51 PSI. System		293	
BATTERY OFFSET			
Voltage		Offset	
0		1.996	
6		1.970	
8		1.382	
10		0.957	
12		0.662	
14		0.454	
16		0.313	
24		0.066	
AFM FUEL			
Air Mass (mg)		51 PSI System	
0		0.000	
70		1.812	
100		2.392	
120		2.779	
200		4.326	
300		6.260	
400		8.193	
750		14.961	
1000		19.795	
1250		24.629	
1500		29.463	
1750		34.298	
2000		39.132	
2250		43.966	
2500		48.800	
2750		53.634	
FUEL ECONOMY			
Inj. Flow for FE:		291	
Inj. Flow for Dash:		291	

2001 AND OLDER		INJECTOR FLOW	
3.0 BAR, 300 KPa, 43.5 PSI. System		272	
BATTERY OFFSET			
Voltage		Offset	
0		1.884	
6		1.860	
8		1.305	
10		0.903	
12		0.625	
14		0.428	
16		0.300	
24		0.062	
AFM FUEL			
Air Mass (mg)		43.5 PSI System	
0		0.000	
70		1.890	
100		2.514	
120		2.930	
200		4.594	
300		6.675	
400		8.756	
750		16.038	
1000		21.240	
1250		26.442	
1500		31.644	
1750		36.846	
2000		42.047	
2250		47.249	
2500		52.451	
2750		57.653	
FUEL ECONOMY			
Inj. Flow for FE:		292	
Inj. Flow for Dash:		292	

Pick which table that best matches your ECU's pressure and voltage values.



FUEL INJECTOR CHARACTERIZATION
MAZDA INJECTOR DATA 30302-1 & 30302-8

INJECTOR BASE PW

11.926

INJECTOR MINIMUM PW

0.714

INJECTOR FLOW RATE

280.2

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	1.893	1.911	1.928	1.946	1.964	1.981	2.000	2.018	2.036	2.055	2.074	2.092	2.112	2.131	2.151	2.170
	7.75	1.505	1.519	1.532	1.546	1.560	1.575	1.589	1.604	1.618	1.633	1.648	1.663	1.678	1.694	1.709	1.725
	9	1.196	1.207	1.218	1.229	1.240	1.251	1.263	1.274	1.286	1.298	1.310	1.322	1.334	1.346	1.358	1.371
	10.25	0.950	0.959	0.968	0.977	0.986	0.994	1.004	1.013	1.022	1.031	1.041	1.050	1.060	1.070	1.079	1.089
	11.5	0.755	0.762	0.769	0.776	0.783	0.790	0.798	0.805	0.812	0.820	0.827	0.835	0.842	0.850	0.858	0.866
	12.75	0.600	0.606	0.611	0.617	0.622	0.628	0.634	0.640	0.645	0.651	0.657	0.663	0.669	0.675	0.682	0.688
	14	0.477	0.481	0.486	0.490	0.495	0.499	0.504	0.508	0.513	0.518	0.522	0.527	0.532	0.537	0.542	0.547
	15.25	0.379	0.383	0.386	0.390	0.393	0.397	0.400	0.404	0.408	0.411	0.415	0.419	0.423	0.427	0.431	0.434
	16.5	0.301	0.304	0.307	0.310	0.312	0.315	0.318	0.321	0.324	0.327	0.330	0.333	0.336	0.339	0.342	0.345

VOLUMETRIC EFFICIENCY LOAD MULTIPLIER

RPM	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237
0.0625	1.091	1.091	1.091	1.091	1.091	1.091	1.091	1.091	1.091	1.091	1.091	1.091	1.091	1.091	1.091
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 30302-1 & 30302-8
43.5 PSI / 3 BAR / 300 KPa

INJECTOR SIZE (cc/min)	272
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BATTERY VOLTAGE LATENCY COMPENSATION							
Voltage	4.69	7.99	9.97	12.02	14.00	15.98	18.77
Latency	2.397	1.307	0.908	0.623	0.433	0.301	0.180



FUEL INJECTOR CHARACTERIZATION
MERCEDES/BOSCH INJECTOR DATA 30302-1 & 30302-8

INJECTOR CONSTANT

MS/%

0.12123

OFFSET VS. VOLTAGE

Volts

7.5

10.6

12.1

15.1

16.6

ms

1.594

0.900

0.694

0.399

0.302

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

1.0153

0.9897

0.9961

0.9933

0.9904

1.0015

1.0013

1.0001

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

760

1.0153

0.9897

0.9961

0.9933

0.9904

1.0015

1.0013

1.0001

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1000

1.0153

0.9897

0.9961

0.9933

0.9904

1.0015

1.0013

1.0001

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1240

1.0153

0.9897

0.9961

0.9933

0.9904

1.0015

1.0013

1.0001

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1520

1.0153

0.9897

0.9961

0.9933

0.9904

1.0015

1.0013

1.0001

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

1.0000

2000

1.0153

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FUEL INJECTOR CHARACTERIZATION
NISSAN/INFINITI INJECTOR DATA 30302-1 & 30302-8

INJECTOR LATENCY	
Injector Scalar	0.486
Injector Offset	-0.086
MIN. PULSEWIDTH	714 µs
INJECTOR SCALAR	
350 kPa (cc/min)	292.8
300 kPa (cc/min)	272.1
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	0.901	0.750	0.624	0.519	0.432	0.359	0.299	0.249
25.2	0.939	0.782	0.650	0.541	0.450	0.375	0.312	0.259
31.6	0.988	0.822	0.684	0.569	0.474	0.394	0.328	0.273
39.9	1.055	0.878	0.730	0.608	0.506	0.421	0.350	0.291
50.2	1.144	0.952	0.792	0.659	0.549	0.457	0.380	0.316
63.1	1.268	1.055	0.878	0.730	0.608	0.506	0.421	0.350
79.5	1.443	1.201	0.999	0.832	0.692	0.576	0.479	0.399
100.0	1.697	1.412	1.175	0.978	0.814	0.677	0.563	0.469

INJECTOR LOW PW COMPENSATION (Cobb/EcuTek)																
Effective Pulse Width (ms)																
psi	0.71	0.87	1.02	1.17	1.32	1.48	1.63	1.78	1.93	2.09	2.24	2.39	2.54	2.70	2.85	3.00
20	111	105	101	99	99	99	100	99	99	99	99	100	100	100	100	100
25	111	105	101	99	99	99	100	99	99	99	99	100	100	100	100	100
32	111	105	101	99	99	99	100	99	99	99	99	100	100	100	100	100
40	111	105	101	99	99	99	100	99	99	99	99	100	100	100	100	100
50	111	105	101	99	99	99	100	99	99	99	99	100	100	100	100	100
63	111	105	101	99	99	99	100	99	99	99	99	100	100	100	100	100
79	111	105	101	99	99	99	100	99	99	99	99	100	100	100	100	100
100	111	105	101	99	99	99	100	99	99	99	99	100	100	100	100	100



FUEL INJECTOR CHARACTERIZATION
SUBARU INJECTOR DATA 30302-1 & 30302-8

INJECTOR CONSTANT	FLOW RATE	INJ. PULSEWIDTH LIMIT	FUEL INJECTOR TRIM (Max Small IPW)	FUEL INJECTOR TRIM (Max RPM, Small IPW)
10611.6 μ s	3.27 g/s	0.767 ms	3.000 ms	10000 rpm

FUEL INJECTOR LATENCY						
MAP (psi.)	Voltage	6.05	9	11.5	14	16.5
	-19.34	1.47	0.93	0.59	0.37	0.23
	0	1.72	1.09	0.69	0.43	0.27
	19.34	2.00	1.27	0.80	0.50	0.32

02-05 WRX SPECIFIC						
MAP (psi.)	Voltage	6.05	9	11.5	14	16.5
	-19.34	1.12	0.78	0.54	0.37	0.26
	0	1.30	0.90	0.63	0.43	0.30
	19.34	1.52	1.05	0.73	0.50	0.35

FUEL INJECTOR TRIM (Small IPW) 05-05 WRX SPECIFIC						
PW	0.275	0.820	1.365	1.910	2.455	3.000
%	0.066	-0.013	-0.008	-0.021	0.007	0.004

FUEL INJECTOR TRIM (small IPW)								
PW	0.275	0.665	1.054	1.443	1.832	2.222	2.611	3.000
%	8.57	-0.01	-0.80	-0.61	-0.86	-0.38	0.23	0.13

VEHICLES WITH GDI AND PORT INJECTION USE BELOW

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

INJECTOR SCALING	
312 cc/min	
LOW PW INJ. COMP	
0.767	1.0857
1.086	0.9999
1.405	0.9920
1.724	0.9939
2.043	0.9914
2.362	0.9962
2.681	1.0023
3.000	1.0013

INJ. MIN. OPEN TIME		
0.7670 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						
INJECTOR OPENING TIME						
Voltage		8	10	12	14	16
MAP (psi.)	-1000	1.463	1.013	0.702	0.486	0.336
	0	1.463	1.013	0.702	0.486	0.336
	1000	1.463	1.013	0.702	0.486	0.336

LOW PW COMP MAX RPM	
10000 rpm	



FUEL INJECTOR CHARACTERIZATION
AEM INJECTOR DATA 30302-1 & 30302-8

AEM INFINITY	Injector Flow Rate (cc/min)								
Pressure	20	30	40	50	60	70	80	90	100
Flow	184	226	261	292	320	346	366	389	410

INJECTOR OFFSET (ms)		Battery (Volts)			
		10.0	12.0	14.0	16.0
Inj Pressure (psig)	100.0	1.36	0.94	0.65	0.45
	90.0	1.28	0.88	0.61	0.42
	80.0	1.19	0.83	0.57	0.40
	70.0	1.11	0.77	0.53	0.37
	60.0	1.03	0.72	0.50	0.34
	50.0	0.95	0.66	0.46	0.32
	40.0	0.87	0.60	0.42	0.29
	30.0	0.79	0.55	0.38	0.26
	20.0	0.71	0.49	0.34	0.24

AEM EMS, SERIES 1 AND 2	Battery Offset Primary										
Battery Volts	6	7	8	9	10	11	12	13	14	15	16
Batt Offset	1.88	1.59	1.30	1.10	0.90	0.76	0.63	0.53	0.43	0.36	0.30

INJ SIZE (cc's/min)	272
INJECTOR MIN (uSec)	714
INJECTOR DUTY MAX	95%

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



FUEL INJECTOR CHARACTERIZATION
ECU MASTERS INJECTOR DATA 30302-1 & 30302-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR SIZE (cc/min)	272
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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	1.674	1.462	1.266	1.087	0.923	0.776	0.644	0.529	0.430	0.347	0.280	0.229

58 PSI / 4 BAR / 400 kPa

INJECTOR SIZE (cc/min)	312
------------------------	-----

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	1.878	1.640	1.420	1.219	1.035	0.870	0.723	0.594	0.482	0.389	0.314	0.257



FUEL INJECTOR CHARACTERIZATION
FAST XFI 2.0 INJECTOR DATA 30302-1 & 30302-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR FLOW RATE (lbs/hr)					26			
INJECTOR OPENING OFFSET VS BATTERY VOLTAGE								
Volts	8	9	10	11	12	13	14	16
Offset (ms)	1.27	1.09	0.92	0.78	0.64	0.53	0.43	0.28

58 PSI / 4 BAR / 400 kPa

INJECTOR FLOW RATE (lbs/hr)					29.8			
INJECTOR OPENING OFFSET VS BATTERY VOLTAGE								
Volts	8	9	10	11	12	13	14	16
Offset (ms)	1.59	1.37	1.16	0.98	0.81	0.67	0.54	0.35

FAST XFI SPORTSMAN & STREET INJECTOR DATA

43.5 PSI / 3 BAR / 300 kPa	
Injector Flow Rate (lbs/hr)	26
Injector Opening Tims (ms)	0.4

58 PSI / 4 BAR / 400 kPa	
Injector Flow Rate (lbs/hr)	30
Injector Opening Tims (ms)	0.5



FUEL INJECTOR CHARACTERIZATION
HALTECH DATA 30302-1 & 30302-8

HALTECH ELITE AND NEXUS

DEAD TIME TABLE				
Volts\PSI	29.000	43.500	58.000	72.500
16.0	0.243	0.280	0.314	0.352
14.0	0.373	0.430	0.482	0.541
12.0	0.560	0.644	0.723	0.811
10.0	0.802	0.923	1.035	1.162
8.0	1.100	1.266	1.420	1.593
6.0	1.454	1.674	1.878	2.106

INJECTOR FLOW TABLE				
PSI	29.0	43.5	58.0	72.5
Flow (cc)	234	272	312	349

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	0.465	0.405	0.335	0.266	0.197	0.128	0.086	0.058	0.035	0.015	-0.003	-0.011	-0.013	-0.012	-0.007	-0.007	-0.007	-0.012	-0.013	-0.015	-0.020	-0.019	-0.014	-0.006	0.004	0.007	0.006	0.005	0.005	0.004	0.003

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

INJ FLOW RATE (cc/min)	272
------------------------	-----

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:	1.250	1.195	1.140	1.086	1.040	0.994	0.949	0.903	0.865	0.827	0.790	0.752	0.720	0.689	0.657	0.625	0.599	0.573	0.547	0.520	0.499	0.477	0.455	0.433	0.415	0.397	0.378	0.360	0.345	0.330	0.315	0.300

58 PSI / 4 BAR / 400 kPa

INJ FLOW RATE (cc/min)	312
------------------------	-----

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	1.402	1.341	1.279	1.218	1.167	1.116	1.064	1.013	0.971	0.928	0.886	0.843	0.808	0.772	0.737	0.702	0.672	0.643	0.613	0.584	0.559	0.535	0.510	0.486	0.465	0.445	0.425	0.404	0.387	0.370	0.353	0.336



FUEL INJECTOR CHARACTERIZATION

HOLLEY TERMINATOR/DOMINATOR INJECTOR DATA 30302-1 & 30302-8

43.5 PSI / 3 BAR / 300 kPa

RATED FLOW PER INJECTOR (lb/hr)		25.98		INJECTOR TYPE		High Impedance		MIN INJECTOR OPENING TIME		0.714						
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	1.30	1.13	0.97	0.84	0.72	0.63	0.54	0.47	0.40	0.35	0.30	0.26	0.22	0.19	0.17	0.14

58 PSI / 4 BAR / 400 kPa

RATED FLOW PER INJECTOR (lb/hr)				29.81		INJECTOR TYPE				High Impedance		MIN INJECTOR OPENING TIME (ms)				0.714	
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	1.46	1.26	1.09	0.94	0.81	0.70	0.61	0.52	0.45	0.39	0.34	0.29	0.25	0.22	0.19	0.16	



FUEL INJECTOR CHARACTERIZATION
LINK ECU INJECTOR DATA 30302-1 & 30302-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)										272					MINIMUM PULSE WIDTH (ms)										0.714								
INJECTOR DEAD TIME (ms)																																	
Voltage	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																	
Dead Time	1.462	1.266	1.087	0.923	0.776	0.644	0.529	0.430	0.347	0.280	0.229	0.195	0.176	0.164	0.153	0.148																	
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	0.457	0.370	0.284	0.197	0.111	0.070	0.040	0.015	-0.007	-0.013	-0.013	-0.007	-0.007	-0.011	-0.013	-0.015	-0.021	-0.017	-0.008	0.004	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000

58 PSI / 4 BAR / 400 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)										312					MINIMUM PULSE WIDTH (ms)										0.714								
INJECTOR DEAD TIME (ms)																																	
Voltage	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																	
Dead Time	1.640	1.420	1.219	1.035	0.870	0.723	0.594	0.482	0.389	0.314	0.257	0.218	0.198	0.184	0.172	0.166																	
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	0.457	0.370	0.284	0.197	0.111	0.070	0.040	0.015	-0.007	-0.013	-0.013	-0.007	-0.007	-0.011	-0.013	-0.015	-0.021	-0.017	-0.008	0.004	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000



FUEL INJECTOR CHARACTERIZATION
MEGASQUIRT/TUNERSTUDIO INJECTOR DATA 30302-1 & 30302-8

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)		272
BATTERY OFFSET		
Curve 1		
7.2		151.1
9.6		97.2
12.0		62.5
14.4		40.2
16.8		25.9
19.2		16.6
BANK 1 Dead-Time @ 100%(ms)		1.000

58 PSI / 4 BAR / 400 kPa

INJECTOR SIZE EACH (cc)		312
BATTERY OFFSET		
Curve 2		
7.2		169.5
9.6		109.1
12.0		70.2
14.4		45.1
16.8		29.0
19.2		18.7
BANK 1 Dead-Time @ 100%(ms)		1.000

INJECTOR SMALL PULSEWIDTHS						
New (ms)	0.000	0.833	1.077	1.371	1.682	2.000
Original (ms)	0.000	0.767	1.075	1.383	1.692	2.000

USE BELOW IF USING A PNP ECU

43.5 PSI / 3 BAR / 300 kPa

BATTERY OFFSET	
Voltage	Offset (ms)
6.0	1.674
8.0	1.266
10.0	0.923
12.0	0.644
14.0	0.430
16.0	0.280

58 PSI / 4 BAR / 400 kPa

BATTERY OFFSET	
Voltage	Offset (ms)
6.0	1.878
8.0	1.420
10.0	1.035
12.0	0.723
14.0	0.482
16.0	0.314



FUEL INJECTOR CHARACTERIZATION
EMTRON INJECTOR DATA 30302-1 & 30302-8

REF INJECTOR SIZE (Primary)	
Ref injector size (300 kPa)	272 cc/min
Ref injector size (400 kPa)	312 cc/min
Ref injector size (500 kPa)	349 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	1.674	1.305	0.903	0.625	0.433	0.300
	310.2	1.692	1.319	0.913	0.632	0.438	0.303
	344.7	1.766	1.377	0.953	0.660	0.457	0.316
	379.2	1.841	1.435	0.993	0.688	0.476	0.330
	413.7	1.916	1.493	1.034	0.716	0.496	0.343
	448.2	1.990	1.551	1.074	0.744	0.515	0.356
	482.7	2.065	1.609	1.114	0.771	0.534	0.370
	517.2	2.139	1.667	1.154	0.799	0.553	0.383
	551.7	2.214	1.726	1.195	0.827	0.573	0.397
	587.2	2.291	1.785	1.236	0.856	0.593	0.410
	620.7	2.363	1.842	1.275	0.883	0.611	0.423

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	0.457	0.370	0.284	0.197	0.070	0.015	-0.013	-0.007	-0.011	-0.015	-0.017	0.004	0.006	0.004	0.002



FUEL INJECTOR CHARACTERIZATION
MAXX ECU INJECTOR DATA 30302-1 & 30302-8

43.5 PSI / 3 BAR / 300 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min)	272
MINIMUM PULSE WIDTH (ms)	0.714

INJECTOR DEAD TIME (ms)						
Voltage	8	10	12	14	16	18
Dead Time	1.305	0.903	0.625	0.433	0.300	0.195

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	0.457	0.370	0.284	0.197	0.111	0.070	0.040	0.015	-0.007	-0.013	-0.013	-0.007	-0.007	-0.011	-0.013	-0.015	-0.021	-0.017	-0.008	0.004	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000

58 PSI / 4 BAR / 400 kPa

INJECTOR FLOW AT RATED PRESSURE (cc/min):	312
MINIMUM PULSE WIDTH (ms):	0.714

INJECTOR DEAD TIME (ms)						
Voltage	8	10	12	14	16	18
Dead Time	1.463	1.013	0.702	0.486	0.336	0.218

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	0.457	0.370	0.284	0.197	0.111	0.070	0.040	0.015	-0.007	-0.013	-0.013	-0.007	-0.007	-0.011	-0.013	-0.015	-0.021	-0.017	-0.008	0.004	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000



FUEL INJECTOR CHARACTERIZATION
FUELTECH INJECTOR DATA 30302-1 & 30302-8

43.5 PSI / 3 BAR / 300 kPa

INPUT AMOUNT OF CYLINDERS/ROTORS	4.00 Cyl/Rotors
PRIMARY/SECONDARY TOTAL FLOW	103.94 lb.hr
SINGLE INJECTOR FLOW	25.98 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	1.305	1.086	0.903	0.752	0.625	0.520	0.433	0.360	0.300

58 PSI / 4 BAR / 400 kPa

INPUT AMOUNT OF CYLINDERS/ROTORS	4.00 Cyl/Rotors
PRIMARY/SECONDARY TOTAL FLOW	119.23 lb.hr
SINGLE INJECTOR FLOW	29.81 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	1.463	1.218	1.013	0.843	0.702	0.584	0.486	0.404	0.336



FUEL INJECTOR CHARACTERIZATION
ACES INJECTOR DATA 30302-1 & 30302-8

43.5 PSI / 3 BAR / 300 kPa

RATED FLOW PER INJECTOR (mg/s)	3273.86
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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)	714.28	714.28	714.28	714.28	714.28	714.28	714.28	714.28

INJECTOR OFF TIME								
Voltage	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
Time (µs)	1673.95	1566.00	1462.07	1362.18	1266.31	1174.47	1086.66	1002.87



FUEL INJECTOR CHARACTERIZATION
UNIVERSAL INJECTOR DATA 30302-1 & 30302-8

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	196	234	272	292	312	349	388	426	465
Flowrate lb/hr	18.7	22.4	26.0	27.9	29.8	33.3	37.0	40.7	44.4
Flowrate g/s	2.36	2.82	3.27	3.51	3.76	4.20	4.67	5.13	5.59

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	1.586	1.864	2.146	2.407	2.700	2.972	3.249	3.527	3.804
	4.5	1.495	1.756	2.022	2.268	2.544	2.800	3.062	3.323	3.584
	5.0	1.406	1.652	1.902	2.133	2.393	2.634	2.880	3.126	3.371
	5.5	1.320	1.551	1.786	2.003	2.247	2.474	2.704	2.935	3.166
	6.0	1.237	1.454	1.674	1.878	2.106	2.318	2.535	2.751	2.967
	6.5	1.158	1.360	1.566	1.757	1.971	2.169	2.371	2.573	2.776
	7.0	1.081	1.270	1.462	1.640	1.840	2.025	2.214	2.403	2.592
	7.5	1.007	1.183	1.362	1.528	1.714	1.887	2.063	2.239	2.414
	8.0	0.936	1.100	1.266	1.420	1.593	1.754	1.917	2.081	2.245
	8.5	0.868	1.020	1.174	1.317	1.478	1.627	1.778	1.930	2.082
	9.0	0.803	0.944	1.087	1.219	1.367	1.505	1.645	1.786	1.926
	9.5	0.741	0.871	1.003	1.125	1.262	1.389	1.519	1.648	1.778
	10.0	0.682	0.802	0.923	1.035	1.162	1.279	1.398	1.517	1.636
	10.5	0.626	0.736	0.847	0.951	1.066	1.174	1.283	1.393	1.502
	11.0	0.573	0.674	0.776	0.870	0.976	1.074	1.175	1.275	1.375
	11.5	0.523	0.615	0.708	0.794	0.891	0.981	1.072	1.163	1.255
	12.0	0.476	0.560	0.644	0.723	0.811	0.892	0.976	1.059	1.142
	12.5	0.432	0.508	0.585	0.656	0.736	0.810	0.885	0.961	1.036
	13.0	0.391	0.459	0.529	0.594	0.666	0.733	0.801	0.870	0.938
	13.5	0.353	0.415	0.478	0.536	0.601	0.661	0.723	0.785	0.846
	14.0	0.318	0.373	0.430	0.482	0.541	0.596	0.651	0.707	0.762
	14.5	0.286	0.336	0.386	0.434	0.486	0.535	0.585	0.635	0.685
	15.0	0.257	0.301	0.347	0.389	0.437	0.481	0.525	0.570	0.615
	15.5	0.230	0.271	0.312	0.349	0.392	0.431	0.472	0.512	0.552
	16.0	0.207	0.243	0.280	0.314	0.352	0.388	0.424	0.460	0.496
	16.5	0.187	0.219	0.253	0.283	0.318	0.350	0.383	0.415	0.448
	17.0	0.170	0.199	0.229	0.257	0.289	0.318	0.347	0.377	0.406
	17.5	0.155	0.182	0.210	0.236	0.264	0.291	0.318	0.345	0.372
	18.0	0.144	0.169	0.195	0.218	0.245	0.270	0.295	0.320	0.345
	18.5	0.136	0.159	0.183	0.206	0.231	0.254	0.278	0.301	0.325
	19.0	0.130	0.153	0.176	0.198	0.222	0.244	0.267	0.289	0.312
	19.5	0.128	0.150	0.173	0.194	0.217	0.239	0.262	0.284	0.306
	20.0	0.117	0.137	0.158	0.177	0.198	0.218	0.239	0.259	0.279