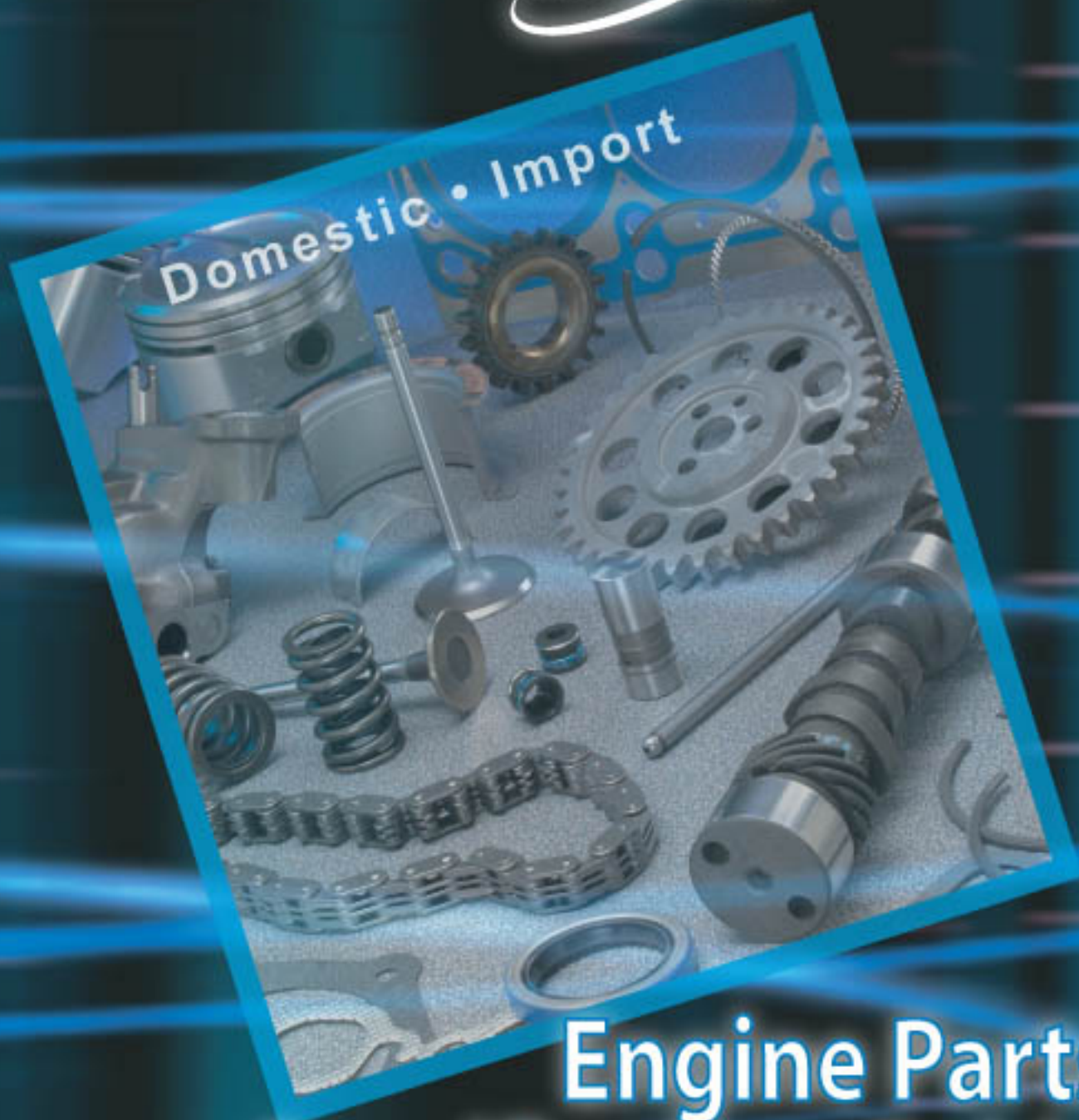


# CLEVITE®

ENGINE PARTS



## Engine Parts Specification Guide

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***Use Of Clevite®, Clevite 77®, Perfect Circle®, and Victor Reinz® Products In Aircraft Or Other Specialty Equipment May Be A Violation Of Local, State or Federal Regulatory Agency Laws, Rules And Regulations.***

***These products are intended solely for automotive applications. Under absolutely NO circumstances should these products ever be used in non-automotive applications including, without limitation, aircraft engines, medical equipment, atomic energy devices or reactors.***



## Conversion Charts

<p style="text-align: center;"><b>Cubic Inch Displacement</b></p> <p style="text-align: center;"><math>\pi r^2 \times s \times c = \text{Displacement}</math></p> <p>r = 1/2 Cyl. Diameter  s = Stroke  c = Number of Cylinders  <math>\pi = 3.1416</math></p>	<p style="text-align: center;"><b>Compression Ratio</b></p> <p style="text-align: center;"><math>\frac{\text{P.D.} + \text{C.V.}}{\text{C.V.}} = \text{Compression Ratio}</math></p> <p>P.D. = Piston Displacement for 1 Cyl.  C.V. = Clearance Volume for 1 Cyl.</p>
<p style="text-align: center;"><b>Cubic Centimeters (cc) To Cubic Inches</b></p> <p style="text-align: center;">Cubic Centimeters x .061 = Cubic Inches</p>	<p style="text-align: center;"><b>Cubic Inches To Cubic Centimeters</b></p> <p style="text-align: center;">Cubic Inches x 16.39 = Cubic Centimeters</p>
<p><b>Cubic Liters To Cubic Inches</b></p> <p>Liters x 61.023 = Cubic Inches</p>	
<p style="text-align: center;"><b>Millimeters To Inches</b></p> <p style="text-align: center;">Millimeters x .03937" = Inches</p>	<p style="text-align: center;"><b>Inches To Millimeters</b></p> <p style="text-align: center;">Inches x 25.4mm = Millimeters</p>
<p style="text-align: center;"><b>Clearance Volume (for one cylinder)</b></p> <p>CHV – EDV + DCV + HGV = CV</p> <p>CHV = Cylinder Head Volume (published or measured)  EDV = Effective Dome Volume = Piston Dome Volume – Valve Relief Volume  DCV = Deck Clearance Volume (below block) = .7854 x (Bore Diameter)<sup>2</sup> x Deck Clearance  HGV = Head Gasket Volume = .7854 x (Gasket ID)<sup>2</sup> x Compressed Gasket Thickness</p>	

## Conversion Charts (Cont.)

### Metric (millimeters) Converted To Decimal (inches)

Metric (mm)	Decimal (in.)	Metric (mm)	Decimal (in.)	Metric (mm)	Decimal (in.)	Metric (mm)	Decimal (in.)
1	.039	29	1.142	57	2.244	85	3.346
2	.079	30	1.181	58	2.283	86	3.386
3	.118	31	1.220	59	2.323	87	3.425
4	.157	32	1.260	60	2.362	88	3.465
5	.197	33	1.299	61	2.402	89	3.504
6	.236	34	1.339	62	2.441	90	3.543
7	.276	35	1.378	63	2.480	91	3.583
8	.315	36	1.417	64	2.520	92	3.622
9	.354	37	1.457	65	2.559	93	3.661
10	.394	38	1.496	66	2.598	94	3.701
11	.433	39	1.535	67	2.638	95	3.740
12	.472	40	1.575	68	2.677	96	3.780
13	.512	41	1.614	69	2.717	97	3.819
14	.551	42	1.654	70	2.756	98	3.858
15	.591	43	1.693	71	2.795	99	3.898
16	.630	44	1.732	72	2.835	100	3.937
17	.669	45	1.772	73	2.874	101	3.976
18	.709	46	1.811	74	2.913	102	4.016
19	.748	47	1.850	75	2.953	103	4.055
20	.787	48	1.890	76	2.992	104	4.095
21	.827	49	1.929	77	3.032	105	4.134
22	.866	50	1.969	78	3.071	106	4.173
23	.906	51	2.008	79	3.110	107	4.213
24	.945	52	2.047	80	3.150	108	4.252
25	.984	53	2.087	81	3.189	109	4.291
26	1.024	54	2.126	82	3.228	110	4.331
27	1.063	55	2.165	83	3.268		
28	1.102	56	2.205	84	3.307		

### Torque (Foot-pounds) Converted To Torque (Newton-meters)

		Units Column									
		0	1	2	3	4	5	6	7	8	9
T E N S  C O L U M N	Ft. Lb.	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m
	---		1.3558	2.7116	4.0675	5.4233	6.7791	8.1349	9.4907	10.8465	12.2024
	10	13.5582	14.9140	16.2698	17.6256	18.9815	20.3373	21.6931	23.0489	24.4047	25.7605
	20	27.1164	28.4722	29.8280	31.1838	32.5396	33.8954	35.2513	36.6071	37.9629	39.3187
	30	40.0304	42.0304	43.3862	44.7420	46.0978	47.4536	48.8094	50.1653	51.5211	52.8769
	40	54.2327	55.5885	56.9444	58.3002	59.6560	61.0118	62.3676	63.7234	65.0793	66.4351
	50	67.7909	69.1467	70.5025	71.8584	73.2142	74.5700	75.9258	77.2815	78.6374	79.9933
	60	81.3491	82.7049	84.0607	85.4165	86.7724	88.1282	89.4840	90.8398	92.1956	93.5514
	70	94.9073	96.2631	97.6189	98.9747	100.3305	101.6863	103.0422	104.3980	105.7538	107.1096
	80	108.4654	109.8213	111.1771	112.5329	113.8887	115.2445	116.6003	117.9562	119.3120	120.6678
90	122.0236	123.3794	124.7353	126.0911	127.4469	128.8027	130.1585	131.5143	132.8702	134.2260	
100	135.5818	136.9376	138.2934	139.6493	141.0051	142.3609	143.7167	145.0725	146.4283	147.7842	

## Conversion Charts (Cont.)

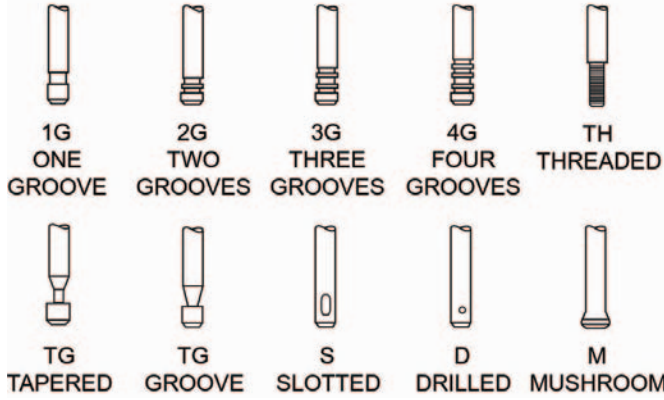
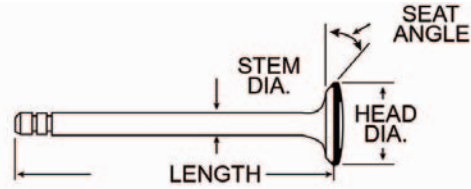
### Fractions (Inches) Converted To Decimals (Inches)

Fraction (inches)	Decimal (inches)	Fraction (inches)	Decimal (inches)	Fraction (inches)	Decimal (inches)	Fraction (inches)	Decimal (inches)
1/64	.016	17/64	.266	33/64	.516	49/64	.766
1/32	.031	9/32	.281	17/32	.531	25/32	.781
3/64	.047	19/64	.297	35/64	.547	51/64	.797
1/16	.063	5/16	.313	9/16	.563	13/16	.813
5/64	.078	21/64	.328	37/64	.578	53/64	.828
3/32	.094	11/32	.344	19/32	.594	27/32	.844
7/64	.109	23/64	.359	39/64	.609	55/64	.859
1/8	.125	3/8	.375	5/8	.625	7/8	.875
9/64	.141	25/64	.391	41/64	.641	57/64	.891
5/32	.156	13/32	.406	21/32	.656	29/32	.906
11/64	.172	27/64	.422	43/64	.672	59/64	.922
3/16	.188	7/16	.438	11/16	.688	15/16	.938
13/64	.203	29/64	.453	45/64	.703	61/64	.953
7/32	.219	15/32	.469	23/32	.719	31/32	.969
15/64	.234	31/64	.484	47/64	.734	63/64	.984
1/4	.250	1/2	.500	3/4	.750	1	1.000

### Decimal (Inches) Converted To Metric (Millimeters)

Decimal (inches)	Metric (mm)	Decimal (inches)	Metric (mm)	Decimal (inches)	Metric (mm)	Decimal (inches)	Metric (mm)
.001	.025	.200	5.080	.480	12.192	.760	19.304
.002	.051	.210	5.334	.490	12.446	.770	19.558
.003	.076	.220	5.588	.500	12.700	.780	19.812
.004	.102	.230	5.842	.510	12.954	.790	20.055
.005	.127	.240	6.096	.520	13.208	.800	20.320
.006	.152	.250	6.350	.530	13.462	.810	20.574
.007	.178	.260	6.604	.540	13.716	.820	20.828
.008	.203	.270	6.858	.550	13.970	.830	21.082
.009	.229	.280	7.112	.560	14.224	.840	21.336
.010	.254	.290	7.366	.570	14.478	.850	21.590
.020	.508	.300	7.620	.580	14.732	.860	21.844
.030	.762	.310	7.874	.590	14.986	.870	22.098
.040	1.016	.320	8.128	.600	15.240	.880	22.352
.050	1.270	.330	8.382	.610	15.494	.890	22.606
.060	1.524	.340	8.636	.620	15.748	.900	22.860
.070	1.778	.350	8.890	.630	16.002	.910	23.114
.080	2.032	.360	9.144	.640	16.256	.920	23.368
.090	2.286	.370	9.398	.650	16.510	.930	23.622
.100	2.540	.380	9.652	.660	16.764	.940	23.876
.110	2.794	.390	9.906	.670	17.018	.950	24.130
.120	3.048	.400	10.160	.680	17.272	.960	24.384
.130	3.302	.410	10.414	.690	17.526	.970	24.638
.140	3.356	.420	10.668	.700	17.780	.980	24.892
.150	3.810	.430	10.922	.710	18.034	.990	25.146
.160	4.064	.440	11.176	.720	18.288		
.170	4.318	.450	11.430	.730	18.542		
.180	4.572	.460	11.684	.740	18.796		
.190	4.826	.470	11.938	.750	19.050		

# VALVE NUMERICAL SPECIFICATIONS



Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type
211-1018	1.500	5.045	.3410	45°	1G	211-1225	.906	3.382	.3100	45°	1G
211-1019	1.375	5.080	.3410	45°	1G	211-1226	1.530	4.845	.3410	45°	2G
211-1020	1.500	5.363	.3410	45°	2G	211-1261	1.510	4.820	.3410	45°	1G
211-1021	1.375	5.360	.3410	45°	1G	211-1264	1.647	5.090	.3420	45°	1G
211-1023	1.656	5.390	.3720	45°	1G	211-1269	1.203	4.985	.3390	45°	1G
211-1024	1.812	5.515	.3720	45°	1G	211-1279	1.468	4.935	.3410	45°	1G
211-1025	1.656	5.520	.3720	45°	1G	211-1280	1.720	4.915	.3420	45°	2G
211-1026	1.812	5.848	.3715	45°	2G	211-1280.003	1.720	4.915	.3450	45°	1G
211-1027	1.656	5.844	.3715	45°	2G	211-1281	1.415	4.330	.3100	30°	2G
211-1037	1.281	4.780	.3100	45°	2G	211-1283	1.588	6.440	.3420	30°	1G
211-1038	1.437	4.785	.3100	45°	2G	211-1292	1.875	6.391	.3415	30°	2G
211-1045	1.500	5.155	.3720	45°	1G	211-1295	1.156	4.942	.3410	45°	1G
211-1048	1.687	5.155	.3720	45°	1G	211-1303	1.510	4.985	.3410	45°	TG
211-1053	1.328	5.195	.3390	45°	D	211-1305	1.281	4.700	.3410	45°	TG
211-1058	1.516	5.155	.3410	30°	1G	211-1313	1.140	4.084	.3130	45°	1G
211-1066	1.342	4.830	.3410	45°	1G	211-1325	1.510	4.980	.3410	45°	TG
211-1072	1.203	4.015	.3140	30°	D	211-1330	2.245	6.855	.4980	30°	1G
211-1073	1.328	5.180	.3390	45°	1G	211-1358	1.500	5.455	.3410	45°	1G
211-1076	1.510	4.819	.3410	45°	1G	211-1360	1.812	6.083	.3720	45°	1G
211-1081	1.218	4.830	.3410	45°	1G	211-1375	1.250	4.770	.3090	45°	1G
211-1090	1.718	6.670	.4340	45°	2G	211-1378	1.925	5.110	.3420	45°	1G
211-1094	1.718	4.845	.3410	45°	2G	211-1411	1.777	5.750	.4340	45°	TG
211-1095	1.015	4.040	.3130	45°	D	211-1441	1.140	3.990	.3130	45°	TG
211-1112	1.641	6.275	.3410	30°	2G	211-1443	1.890	6.855	.4980	30°	1G
211-1128	1.395	5.045	.3730	45°	2G	211-1473	1.203	5.160	.3400	45°	1G
211-1129	1.594	6.700	.4340	45°	2G	211-1485	1.375	5.450	.3410	45°	1G
211-1130	1.313	5.160	.3730	45°	2G	211-1487	1.656	6.060	.3720	45°	1G
211-1141	1.015	3.938	.3130	45°	DR	211-1515	1.805	6.345	.4340	45°	1G
211-1142	1.094	3.395	.3100	45°	1G	211-1519	1.562	6.330	.3090	45°	1G
211-1153	1.985	7.805	.4970	45°	1G	211-1521	1.395	4.984	.3715	45°	2G
211-1161	1.281	4.815	.3410	45°	1G	211-1549	1.468	5.910	.3720	45°	1G
211-1162	2.000	4.790	.3730	45°	1G	211-1554	1.750	5.703	.4340	45°	1G
211-1168	1.328	4.950	.3410	30°	1G	211-1557	1.510	4.835	.3100	45°	M
211-1187	1.313	4.771	.3090	45°	1G	211-1562	1.468	5.805	.3720	45°	1G
211-1190	1.342	4.940	.3410	45°	1G	211-1563	1.530	5.815	.3730	45°	1G
211-1194	1.511	4.498	.3100	45°	1G	211-1568	1.484	3.920	.3100	30°	D
211-1195	1.501	4.845	.3400	45°	2G	211-1573	1.348	4.470	.3100	45°	2G
211-1199	1.255	5.050	.3720	45°	2G	211-1584	1.438	4.906	.3410	45°	1G
211-1201	1.125	5.155	.3720	45°	2G	211-1586	1.281	4.805	.3100	45°	M
211-1203	1.745	7.058	.4030	30°	2G	211-1588	1.516	5.160	.3410	30°	D
211-1206	1.278	3.977	.3140	30°	DR	211-1589	1.203	5.175	.3380	45°	D

## VALVE NUMERICAL SPECIFICATIONS

Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type
211-1591	1.407	4.840	.3405	45°	2G	211-1934	1.781	4.820	.3410	45°	1G
211-1592	1.313	4.906	.3410	45°	1G	211-1934.003	1.781	4.820	.3440	45°	1G
211-1625	1.600	4.890	.3720	45°	4G	211-1934.015	1.781	4.820	.3560	45°	1G
211-1634	2.020	5.740	.4350	45°	1G	211-1935	1.560	4.815	.3420	45°	1G
211-1635	1.632	5.705	.4340	45°	1G	211-1935.015	1.560	4.815	.3570	45°	1G
211-1644	2.157	6.340	.4350	15°	1G	211-1936	1.651	4.260	.3100	45°	1G
211-1654	2.080	4.869	.3730	45°	2G	211-1937	1.406	4.890	.3720	45°	4G
211-1656	1.844	4.600	.3730	45°	2G	211-1939	1.561	5.430	.3720	45°	1G
211-1657	1.563	4.540	.3720	45°	4G	211-1940	1.772	5.312	.3720	45°	2G
211-1658	1.787	4.889	.3720	30°	4G	211-1943	1.457	5.322	.3720	45°	1G
211-1673	1.500	4.820	.3420	45°	1G	211-1944	1.625	4.645	.3410	45°	1G
211-1679	1.500	4.920	.3410	45°	1G	211-1945	1.870	7.061	.4505	30°	2G
211-1689	1.563	4.540	.3720	45°	2G	211-1947	1.375	4.645	.3410	45°	1G
211-1694	1.970	5.225	.3730	45°	1G	211-1948	1.875	4.740	.3430	45°	1G
211-1695	1.609	5.475	.3720	45°	1G	211-1949	1.562	4.730	.3420	45°	1G
211-1700	1.620	4.775	.3730	45°	2G	211-1950	1.995	4.670	.3430	45°	1G
211-1701	1.360	4.800	.3720	45°	4G	211-1951	1.624	4.665	.3420	45°	1G
211-1702	1.500	5.280	.3410	45°	2G	211-1952	2.072	4.700	.3430	30°	1G
211-1703	1.313	5.281	.3410	45°	2G	211-1963	1.508	5.375	.3710	45°	1G
211-1704	1.468	4.265	.3110	45°	1G	211-1964	1.752	5.395	.3720	45°	1G
211-1705	1.265	4.260	.3100	45°	1G	211-1965	1.500	5.005	.3720	45°	4G
211-1717	1.516	5.050	.3720	30°	1G	211-1966	1.780	4.975	.3730	45°	2G
211-1718	1.652	6.056	.3720	45°	1G	211-1966.005	1.780	4.979	.3775	44.5°	2G
211-1719	1.300	6.063	.3720	45°	1G	211-1967	1.560	4.815	.3420	45°	1G
211-1737	1.563	5.910	.3410	45°	1G	211-1969	1.500	4.820	.3420	45°	1G
211-1738	2.000	5.875	.3410	30°	1G	211-1970	1.780	4.810	.3420	45°	1G
211-1743	1.500	5.690	.4340	45°	2G	211-1974	2.190	5.215	.3720	45°	1G
211-1744	1.656	5.085	.3720	30°	2G	211-1977	1.624	4.695	.3420	45°	1G
211-1746	1.781	5.072	.3720	30°	2G	211-1980	2.065	5.225	.3720	45°	1G
211-1750	1.687	4.775	.3420	30°	2G	211-1982	2.025	4.900	.3720	30°	1G
211-1751	1.375	4.780	.3420	45°	2G	211-1983	1.715	6.230	.3720	45°	2G
211-1754	1.688	5.155	.3720	30°	1G	211-1991	1.120	5.570	.3420	45°	1G
211-1757	1.375	4.565	.3100	45°	1G	211-1992	1.902	6.245	.3720	45°	2G
211-1771	1.375	4.680	.3420	45°	2G	211-1993	1.375	4.940	.3410	45°	1G
211-1774	1.645	5.935	.3420	45°	1G	211-2001	1.720	5.355	.3720	45°	1G
211-1775	1.510	5.820	.3410	45°	TG	211-2002	1.500	4.940	.3430	45°	1G
211-1776	1.328	4.330	.3410	30°	1G	211-2007	1.594	6.700	.4340	45°	2G
211-1777	1.203	4.350	.3390	45°	1G	211-2010	1.454	4.985	.3730	45°	2G
211-1778	1.578	5.030	.3410	30°	1G	211-2011	1.450	4.865	.3420	45°	1G
211-1782	1.808	5.735	.3720	30°	2G	211-2014	1.995	4.707	.3430	45°	1G
211-1783	1.554	5.740	.3720	45°	2G	211-2016	1.780	4.870	.3420	45°	1G
211-1801	1.203	5.215	.3390	45°	1G	211-2021	1.600	4.900	.3410	45°	1G
211-1802	1.604	6.352	.3420	45°	2G	211-2022	2.020	4.880	.3410	45°	1G
211-1803	1.403	6.350	.3410	45°	1G	211-2023	1.500	5.030	.3730	45°	1G
211-1806	1.415	5.290	.3410	30°	1G	211-2024	1.875	5.010	.3730	45°	1G
211-1807	1.270	5.325	.3390	45°	1G	211-2025	1.625	5.160	.3730	45°	1G
211-1810	1.731	7.245	.4030	45°	1G	211-2026	2.000	5.140	.3730	45°	1G
211-1811	1.484	6.240	.4010	45°	1G	211-2027	1.720	5.335	.3720	45°	1G
211-1830	1.527	4.260	.3110	45°	1G	211-2028	1.438	4.952	.3425	45°	1G
211-1834	1.780	5.110	.3420	45°	1G	211-2032	2.078	5.250	.3730	30°	1G
211-1836	2.032	5.445	.3720	45°	1G	211-2033	1.734	5.475	.4150	45°	1G
211-1850	1.940	4.880	.3410	45°	2G	211-2034	1.516	5.167	.3410	30°	1G
211-1863	1.090	5.552	.2480	30°	1G	211-2035	1.203	5.190	.3380	45°	1G
211-1867	1.500	5.731	.3720	45°	2G	211-2037	1.600	4.900	.3410	45°	1G
211-1868	1.688	5.700	.3720	45°	2G	211-2044	1.940	6.150	.4350	45°	2G
211-1869	1.588	6.260	.3720	45°	2G	211-2045	1.625	6.238	.4350	45°	2G
211-1870	1.780	6.260	.3720	45°	2G	211-2047	1.740	4.885	.3720	45°	4G
211-1871	1.375	4.940	.3410	45°	1G	211-2048	1.840	5.235	.3720	45°	1G
211-1883	1.653	5.430	.3700	45°	1G	211-2049	1.660	5.367	.3720	45°	1G
211-1885	1.510	5.095	.3410	45°	1G	211-2050	1.625	5.405	.3730	45°	1G
211-1899	1.640	4.877	.3410	45°	2G	211-2052	2.110	5.095	.3420	30°	2G
211-1900	1.920	4.898	.3410	30°	2G	211-2053	1.513	5.406	.3720	45°	1G
211-1905	1.360	4.797	.3720	45°	2G	211-2060	2.190	5.230	.3420	45°	1G
211-1906	1.670	4.865	.3420	45°	1G	211-2061	1.710	5.050	.3420	45°	1G
211-1915	1.450	4.865	.3410	45°	1G	211-2062	1.687	5.365	.3730	45°	1G
211-1925	1.505	5.370	.4340	45°	1G	211-2066	2.000	5.230	.3420	45°	1G
211-1932	1.780	4.865	.3420	45°	1G	211-2067	1.625	5.245	.3410	45°	1G
211-1933	1.388	4.260	.3100	45°	1G	211-2070	1.960	5.090	.3420	30°	1G



## VALVE NUMERICAL SPECIFICATIONS

Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type
211-2071	1.660	5.080	.3410	45°	1G	211-2199	1.140	3.984	.3130	45°	1G
211-2072	1.940	4.880	.3410	45°	1G	211-2201	1.300	4.680	.3420	30°	1G
211-2072.003	1.940	4.880	.3440	45°	1G	211-2205	1.687	5.153	.3730	45°	1G
211-2072.015	1.940	4.880	.3560	45°	1G	211-2207	1.550	5.016	.3730	45°	1G
211-2073	1.770	5.095	.3410	45°	1G	211-2208	1.782	5.070	.3420	45°	1G
211-2075	1.015	4.075	.3130	45°	1G	211-2209	1.461	5.070	.3410	45°	1G
211-2076	2.190	5.230	.3420	45°	4G	211-2210	1.753	5.393	.3714	45°	1G
211-2080	1.781	5.055	.3420	45°	1G	211-2213	1.600	5.006	.3720	45°	2G
211-2082	2.041	5.230	.3420	45°	4G	211-2220	1.535	3.938	.3140	45°	1G
211-2084	2.020	4.985	.3730	45°	4G	211-2240	1.692	4.550	.3150	45°	1G
211-2085	1.600	5.005	.3720	45°	4G	211-2253	1.378	4.586	.3150	45°	3G
211-2086	2.090	5.445	.3710	30°	1G	211-2271	1.303	4.620	.3130	45°	1G
211-2087	1.710	5.050	.3420	45°	4G	211-2274	1.658	4.580	.3140	45°	1G
211-2089	1.655	5.050	.3410	45°	4G	211-2281	1.382	4.622	.3130	45°	1G
211-2097	1.875	5.350	.3720	45°	1G	211-2291	1.185	4.086	.3130	45°	1G
211-2099	1.460	5.070	.3420	45°	1G	211-2309	1.502	4.688	.3420	30°	1G
211-2099.003	1.460	5.050	.3450	45°	1G	211-2317	1.810	4.920	.3150	45°	3G
211-2099.015	1.460	5.050	.3570	45°	1G	211-2318	1.418	4.296	.3130	45°	1G
211-2104	1.844	5.070	.3420	45°	1G	211-2319	1.623	4.283	.3130	45°	1G
211-2105	1.543	5.075	.3420	45°	1G	211-2320	1.478	4.924	.3130	45°	3G
211-2106	1.744	4.829	.3730	45°	1G	211-2323	1.720	5.007	.3420	45°	1G
211-2107	1.440	4.855	.3730	45°	1G	211-2325	1.605	5.565	.3790	30°	1G
211-2111	2.000	7.867	.4970	44°	1G	211-2327	1.650	4.262	.3160	45°	1G
211-2112	2.375	7.867	.4970	30°	1G	211-2328	1.297	4.204	.3160	45°	1G
211-2114	1.502	4.275	.3100	45°	3G	211-2333	1.203	4.016	.3140	30°	1G
211-2115	1.239	4.265	.3090	45°	3G	211-2334	1.659	4.303	.3130	45°	1G
211-2119	1.622	4.710	.3420	30°	1G	211-2335	1.340	4.356	.3130	45°	1G
211-2120	2.082	5.290	.3420	45°	1G	211-2336	1.751	4.260	.3100	45°	1G
211-2121	1.655	5.080	.3420	45°	1G	211-2337	2.054	5.467	.3720	45°	1G
211-2122	1.397	4.409	.3110	45°	3G	211-2338	1.535	5.482	.3720	45°	1G
211-2125	1.258	4.405	.3150	45°	3G	211-2342	1.380	4.919	.3410	45°	1G
211-2128	1.679	6.035	.3720	45°	1G	211-2344	1.875	5.021	.3430	45°	1G
211-2129	1.375	6.060	.3720	45°	1G	211-2345	1.622	5.031	.3420	30°	1G
211-2131	1.770	4.975	.3410	45°	2G	211-2346	1.710	4.712	.3400	45°	1G
211-2132	2.110	4.980	.3420	30°	1G	211-2348	1.567	4.964	.3710	45°	1G
211-2141	1.720	5.355	.3716	45°	1G	211-2349	1.789	5.157	.3710	45°	1G
211-2142	1.880	4.981	.3725	45°	2G	211-2350	1.567	4.964	.3710	45°	1G
211-2145	1.522	5.000	.3710	45°	2G	211-2351	2.348	9.305	.4960	45°	TG
211-2146	1.811	4.980	.3730	45°	2G	211-2352	2.287	9.274	.4960	45°	TG
211-2147	1.680	4.910	.3720	45°	4G	211-2355	1.970	5.787	.3720	30°	1G
211-2148	1.880	4.981	.3720	45°	4G	211-2356	1.600	5.787	.3720	45°	1G
211-2149	1.680	4.910	.3720	45°	1G	211-2357	1.840	4.912	.3410	45°	2G
211-2150	2.025	4.900	.3720	30°	4G	211-2360	1.500	4.902	.3720	45°	4G
211-2151	1.406	4.890	.3720	45°	4G	211-2361	1.789	5.157	.3710	45°	1G
211-2152	1.787	4.900	.3720	30°	4G	211-2364	1.500	4.620	.3420	45°	2G
211-2155	1.870	6.605	.4510	30°	2G	211-2365	1.720	4.669	.3420	45°	2G
211-2156	2.082	5.200	.3420	45°	1G	211-2366	2.050	5.241	.3420	45°	1G
211-2157	1.653	4.985	.3420	45°	1G	211-2367	1.677	4.964	.3710	45°	1G
211-2159	1.622	4.675	.3420	30°	1G	211-2368	2.064	5.147	.3714	45°	1G
211-2160	1.960	4.980	.3420	45°	2G	211-2369	1.655	5.050	.3410	45°	1G
211-2162	1.875	4.665	.3430	45°	1G	211-2384	1.588	4.355	.3130	45°	1G
211-2164	1.570	4.160	.3170	45°	1G	211-2385	1.338	4.300	.3120	45°	1G
211-2165	1.660	4.959	.3410	45°	2G	211-2404	1.692	4.441	.3140	45°	1G
211-2168	2.000	4.980	.3420	45°	1G	211-2405	1.378	4.439	.3140	45°	1G
211-2169	1.270	4.160	.3150	45°	3G	211-2428	1.417	4.484	.3130	45°	1G
211-2173	1.507	5.375	.3700	45°	1G	211-2435	1.805	5.743	.3710	45°	1G
211-2174	1.534	4.500	.3120	45°	1G	211-2437	1.740	4.797	.3420	45°	4G
211-2175	1.625	5.000	.3420	45°	1G	211-2438	1.510	4.817	.3410	45°	4G
211-2176	1.719	6.810	.3720	30°	1G	211-2439	1.385	5.533	.3100	30°	1G
211-2180	2.157	6.340	.4350	15°	2G	211-2443	1.517	4.995	.3720	45°	2G
211-2181	1.500	4.925	.3720	45°	1G	211-2444	1.622	4.995	.3720	45°	2G
211-2182	1.735	4.787	.3420	45°	4G	211-2450	1.605	5.565	.3790	30°	1G
211-2184	1.522	4.667	.3430	45°	1G	211-2452	1.462	5.010	.3410	45°	1G
211-2185	1.315	4.500	.3120	45°	1G	211-2453	1.600	4.700	.3413	45°	2G
211-2187	1.500	6.810	.3720	45°	1G	211-2454	1.307	4.726	.3410	45°	2G
211-2191	1.805	6.345	.4340	45°	2G	211-2455	2.094	5.698	.3720	60°	2G
211-2193	1.660	5.350	.3720	45°	1G	211-2456	1.804	5.683	.3700	45°	2G
211-2197	1.500	4.775	.3410	45°	4G	211-2461	1.556	5.430	.3700	46°	1G

## VALVE NUMERICAL SPECIFICATIONS

Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type
211-2462	1.185	5.538	.3100	30°	1G	211-2584	1.382	4.901	.3120	45°	1G
211-2463	1.654	5.311	.3160	45°	3G	211-2587	1.220	4.212	.2750	45°	1G
211-2464	1.457	5.194	.3150	45°	3G	211-2588	1.417	4.212	.2750	45°	1G
211-2471	1.598	4.417	.3130	45°	1G	211-2589	1.200	3.921	.2360	45°	1G
211-2472	1.393	4.441	.3110	45°	4G	211-2590	1.007	3.925	.2360	45°	1G
211-2474	1.782	4.840	.3420	45°	4G	211-2593	1.338	4.307	.3130	45°	1G
211-2475	1.460	4.855	.3410	45°	4G	211-2594	1.417	4.271	.3150	45°	1G
211-2480	1.693	4.245	.3130	45°	1G	211-2595	1.574	4.263	.3150	45°	1G
211-2482	1.894	6.869	.4960	30°	1G	211-2596	1.456	4.425	.3138	45°	1G
211-2483	2.250	6.869	.4970	30°	1G	211-2597	1.771	4.464	.3150	45°	1G
211-2484	1.715	6.192	.3720	30°	2G	211-2604	1.456	4.448	.3130	45°	1G
211-2485	1.715	6.213	.3720	30°	1G	211-2611	2.157	6.100	.4350	45°	1G
211-2486	1.500	4.923	.3413	45°	2G	211-2616	1.750	6.428	.4020	45°	2G
211-2486.003	1.500	4.920	.3440	45°	1G	211-2617	2.000	6.428	.4030	45°	2G
211-2486.015	1.500	4.928	.3462	45°	2G	211-2625	1.875	6.665	.4340	30°	1G
211-2489	1.771	6.563	.3717	30°	2G	211-2626	2.031	6.650	.4340	20°	1G
211-2490	1.895	6.563	.3720	30°	2G	211-2636	1.750	6.133	.3720	30°	1G
211-2491	2.020	5.518	.3720	30°	2G	211-2637	1.822	5.161	.3720	30°	1G
211-2492	1.896	5.477	.3720	30°	2G	211-2638	1.875	6.716	.4340	45°	1G
211-2493	1.771	7.148	.3720	30°	2G	211-2649	1.822	5.170	.3720	30°	1G
211-2494	1.646	7.140	.3710	45°	2G	211-2650	1.910	4.916	.3120	45°	1G
211-2495	1.771	6.005	.3720	45°	2G	211-2652	1.500	4.949	.3120	45°	1G
211-2496	1.646	6.005	.3720	45°	2G	211-2653	.472	3.692	.2590	45°	1G
211-2497	1.811	5.109	.3410	45°	1G	211-2656	1.377	4.503	.2590	45°	1G
211-2499	1.653	5.110	.3720	45°	1G	211-2657	.472	3.885	.2590	45°	1G
211-2500	1.718	4.705	.3410	45°	2G	211-2658	1.378	4.755	.2740	45°	1G
211-2501	1.425	4.736	.3410	45°	1G	211-2659	1.181	4.436	.2590	45°	1G
211-2502	1.902	6.148	.3720	45°	2G	211-2660	1.062	4.436	.2590	45°	1G
211-2503	1.720	6.138	.3720	45°	1G	211-2663	1.378	4.783	.2730	45°	1G
211-2504	1.811	4.338	.3130	45°	1G	211-2664	1.259	4.484	.2580	45°	1G
211-2505	1.496	4.255	.3120	45°	1G	211-2665	1.181	4.456	.2740	45°	1G
211-2506	1.338	4.023	.2580	45°	1G	211-2667	1.102	4.508	.2580	45°	1G
211-2507	1.185	3.976	.2580	45°	1G	211-2668	1.141	4.488	.2580	45°	1G
211-2508	1.839	6.016	.3720	30°	1G	211-2669	1.181	4.744	.2590	45°	1G
211-2509	1.650	6.017	.3710	30°	1G	211-2671	.472	3.511	.2590	45°	1G
211-2510	1.747	4.840	.3740	45°	1G	211-2675	1.665	4.350	.3130	45°	1G
211-2511	1.395	5.470	.3720	45°	1G	211-2676	1.417	4.334	.3120	45°	1G
211-2512	1.444	5.998	.3710	30°	1G	211-2677	1.732	4.409	.3160	45°	1G
211-2513	1.620	5.996	.3720	30°	1G	211-2679	1.417	4.401	.3160	45°	1G
211-2514	1.750	4.667	.3430	45°	1G	211-2687	1.781	4.750	.3420	45°	1G
211-2517	1.378	4.738	.3130	45°	1G	211-2688	1.572	4.760	.3420	45°	1G
211-2518	1.600	4.700	.3130	45°	1G	211-2689	1.870	7.071	.4510	30°	2G
211-2530	1.456	5.244	.3120	45°	1G	211-2689B	1.870	7.071	.4510	30°	2G
211-2536	1.095	5.550	.2480	30°	1G	211-2692	1.622	4.797	.3420	45°	4G
211-2538	1.689	5.743	.3920	45°	1G	211-2693	1.380	4.807	.3410	45°	4G
211-2539	1.611	5.745	.3910	45°	1G	211-2694	1.924	5.960	.3720	45°	1G
211-2543	1.310	5.929	.3410	30°	2G	211-2695	1.727	5.980	.3720	45°	1G
211-2544	1.315	5.987	.3410	30°	2G	211-2696	1.418	4.137	.3150	45°	3G
211-2546	1.375	4.526	.3090	45°	1G	211-2697	1.656	4.133	.3160	45°	1G
211-2547	1.480	5.356	.3090	30°	1G	211-2700	1.599	4.498	.3122	45°	1G
211-2548	1.250	4.438	.3090	45°	1G	211-2701	1.399	4.535	.3120	45°	4G
211-2549	1.787	4.899	.3720	30°	1G	211-2702	1.603	4.511	.3130	45°	1G
211-2550	1.406	4.892	.3720	45°	1G	211-2703	1.399	4.535	.3120	45°	4G
211-2551	1.665	5.942	.3410	45°	1G	211-2705	1.507	4.688	.3420	30°	1G
211-2552	1.812	5.942	.3410	30°	1G	211-2706	1.451	4.942	.3410	45°	1G
211-2553	.276	3.840	.1693			211-2707	1.782	4.942	.3420	45°	1G
211-2554	1.496	5.110	.3720	45°	2G	211-2708	1.540	5.383	.3160	45°	3G
211-2555	1.220	4.114	.3150	45°	3G	211-2709	1.344	5.271	.3150	45°	3G
211-2560	1.805	6.101	.4340	44°	1G	211-2710	1.811	4.260	.3140	45°	1G
211-2561	1.878	5.689	.3719	60°	1G	211-2711	1.496	4.177	.3140	45°	1G
211-2562	1.600	5.677	.3719	52°	1G	211-2715	1.720	5.355	.3720	45°	1G
211-2563	1.658	4.889	.3140	45°	1G	211-2716	1.940	5.230	.3710	45°	1G
211-2565	1.496	4.928	.3130	45°	1G	211-2717	1.660	5.367	.3710	44°	1G
211-2570	1.456	4.594	.2740	45°	1G	211-2719	1.498	4.072	.3140	45°	1G
211-2571	1.181	4.566	.2740	45°	1G	211-2720	1.720	4.394	.3130	45°	1G
211-2579	1.377	4.255	.2740	45°	1G	211-2721	1.500	4.350	.3130	45°	1G
211-2580	1.614	4.216	.2740	45°	1G	211-2722	1.692	5.456	.3136	45°	1G
211-2583	1.653	4.948	.2740	45°	1G	211-2723	1.456	5.165	.3130	45°	1G

## VALVE NUMERICAL SPECIFICATIONS

Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type
211-2724	1.718	4.686	.3140	45°	1G	211-3178	1.102	3.307	.2160	45°	1G
211-2725	1.425	4.736	.3130	45°	1G	211-3179	1.384	4.015	.2600	45°	1G
211-2726	1.710	4.726	.3400	45°	1G	211-3180	1.517	4.994	.3720	45°	2G
211-2727	1.490	4.725	.3410	45°	1G	211-3181	1.142	4.578	.2360	45°	1G
211-2728	1.500	4.717	.3410	45°	1G	211-3182	1.300	4.578	.2590	45°	1G
211-2731	1.500	4.923	.3720	45°	2G	211-3185	1.300	4.110	.2590	45°	1G
211-2734	1.181	4.310	.2750	45°	1G	211-3186	1.102	4.171	.2580	45°	1G
211-2735	1.397	4.329	.2750	46°	1G	211-3187	1.102	4.130	.2580	45°	1G
211-2736	1.437	4.320	.2750	46°	1G	211-3188	1.811	4.212	.3130	45°	1G
211-2737	1.240	4.310	.2750	45°	1G	211-3189	1.496	4.142	.3120	45°	1G
211-2738	1.500	4.542	.3130	45°	1G	211-3190	1.507	4.985	.3420	45°	1G
211-2739	1.661	4.615	.3130	45°	3G	211-3191	1.736	4.280	.3130	45°	1G
211-2740	1.376	4.620	.3120	45°	3G	211-3192	1.453	4.260	.3120	45°	1G
211-2742	1.720	4.591	.3140	45°	1G	211-3194	1.654	4.101	.3140	45°	1G
211-2744	1.304	4.744	.3410	45°	1G	211-3195	1.378	4.103	.3140	45°	1G
211-2746	1.220	4.140	.2740	45°	1G	211-3196	1.690	4.021	.3135	45°	1G
211-2747	1.416	4.140	.2740	45°	1G	211-3197	1.375	4.021	.3126	45°	1G
211-2748	1.673	6.945	.3790	30°	1G	211-3198	1.455	5.637	.3710	45°	1G
211-2749	1.673	6.941	.3790	30°	1G	211-3199	1.180	4.160	.2590	45°	1G
211-2752	2.020	5.518	.3720	30°	2G	211-3200	1.062	4.127	.2580	45°	1G
211-2753	1.896	5.477	.3720	30°	2G	211-3201	1.772	5.084	.3138	30°	1G
211-2758	1.641	5.532	.3410	30°	2G	211-3202	1.654	5.081	.3138	45°	1G
211-2759	1.375	5.534	.3390	45°	1G	211-3203	2.047	5.946	.3730	30°	1G
211-2761	1.710	5.689	.3721	30°	1G	211-3204	1.811	5.942	.3730	45°	1G
211-2762	1.455	5.641	.3720	45°	1G	211-3205	1.791	4.949	.3127	45°	2G
211-2763	1.692	4.084	.2760	45°	1G	211-3206	1.476	4.974	.3116	45°	4G
211-2764	1.437	4.076	.2750	44°	1G	211-3207	1.437	4.091	.2742	45°	1G
211-2767	1.692	4.334	.3150	45°	1G	211-3209	1.732	5.457	.3136	45°	1G
211-2768	1.378	4.283	.3120	45°	1G	211-3210	1.260	4.100	.2739	45°	1G
211-2771	1.690	4.060	.3138	45°	1G	211-3211	1.378	4.516	.2733	45°	3G
211-2772	1.375	4.050	.3130	45°	1G	211-3212	1.457	5.165	.3130	45°	1G
211-3003	1.399	4.507	.3200	45°	4G	211-3213	1.920	4.906	.3115	44°	1G
211-3010	1.540	5.368	.3210	45°	3G	211-3214	1.142	4.959	.2722	45°	3G
211-3026	1.496	4.390	.3140	30°	1G	211-3215	1.800	4.721	.3134	45°	1G
211-3027	1.280	4.390	.3140	45°	1G	211-3216	1.624	4.920	.3115	44°	1G
211-3028	1.909	4.911	.0311	45°	1G	211-3217	1.556	3.618	.3138	45°	3G
211-3029	1.500	4.939	.3120	44°	1G	211-3218	1.520	4.713	.3130	45°	1G
211-3030	.000	.004	.0000	45°	1G	211-3219	1.441	4.550	.2740	45°	1G
211-3033	1.261	4.144	.2740	45°	1G	211-3220	1.229	3.592	.3127	45°	3G
211-3034	1.103	4.120	.2735	45°	1G	211-3221	1.339	4.411	.2160	45°	1G
211-3037	1.786	5.500	.3730	45°	1G	211-3222	1.278	4.506	.2736	45°	1G
211-3038	1.535	5.512	.3730	45°	1G	211-3223	1.579	3.596	.3138	45°	3G
211-3039	1.477	4.863	.3720	45°	1G	211-3224	1.142	4.920	.2148	45°	1G
211-3040	1.417	4.607	.3130	45°	1G	211-3225	1.264	3.760	.2745	45°	1G
211-3041	1.198	4.616	.3120	45°	1G	211-3226	1.106	3.866	.2730	45°	1G
211-3042	1.892	5.406	.3720	45°	1G	211-3227	1.311	3.589	.3130	45°	3G
211-3043	1.580	5.403	.3720	45°	1G	211-3228	1.500	3.596	.3138	45°	3G
211-3050	1.780	6.130	.3740	30°	1G	211-3229	1.299	4.033	.2157	45°	1G
211-3055	1.543	6.155	.3720	30°	1G	211-3230	1.103	4.037	.2148	45°	1G
211-3056	1.505	4.905	.3730	45°	1G	211-3233	1.840	4.881	.3410	45°	1G
211-3058	1.338	4.318	.2590	45°	1G	211-3234	1.500	4.920	.3410	45°	1G
211-3059	1.200	4.322	.2570	45°	1G	211-3235	1.142	4.526	.2160	45°	1G
211-3060	1.772	4.814	.3420	45°	1G	211-3236	.984	4.675	.2148	45°	1G
211-3061	1.501	4.727	.3410	45°	1G	211-3237	1.181	3.598	.2350	45°	1G
211-3062	1.280	4.558	.2750	45°	1G	211-3238	.967	3.618	.2350	45°	1G
211-3063	1.338	4.545	.2740	45°	1G	211-3239	1.104	4.635	.2146	45°	1G
211-3064	1.378	3.818	.2350	45°	1G	211-3240	1.201	4.091	.2350	45°	1G
211-3066	1.752	4.622	.2750	45°	3G	211-3242	1.222	3.983	.2750	45°	1G
211-3067	1.339	4.622	.2740	45°	3G	211-3243.015	1.713	4.094	.3313	45°	1G
211-3068	1.496	4.065	.2740	45°	1G	211-3244	1.358	4.098	.3153	45°	3G
211-3069	1.259	4.065	.2740	45°	1G	211-3244.015	1.358	4.098	.3303	45°	3G
211-3070	1.164	4.080	.2340	45°	1G	211-3245	1.260	3.842	.2350	44°	1G
211-3172	1.570	6.784	.4350	30°	1G	211-3246	1.063	3.876	.2350	44°	1G
211-3173	1.690	6.827	.3730	30°	1G	211-3247	1.811	4.524	.2745	45°	3G
211-3174	1.570	6.783	.3720	30°	1G	211-3248	1.535	4.524	.2739	45.5°	3G
211-3175	1.417	4.550	.2750	45°	1G	211-3250	1.940	4.880	.3414	45°	2G
211-3176	1.181	4.550	.2740	45°	1G	211-3257	1.982	5.195	.3415	44.5°	1G
211-3177	1.378	3.307	.2160	45°	1G	211-3258	1.181	3.635	.2350	45°	1G

## VALVE NUMERICAL SPECIFICATIONS

Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type
211-3261	1.339	4.780	.2745	45°	1G	211-4016	1.221	3.969	.2561	45°	1G
211-3262	1.339	3.743	.2353	45°	1G	211-4017	1.199	4.156	.2576	45°	1G
211-3263	1.710	4.092	.3163	45°	1G	211-4018	1.142	4.492	.2354	45°	1G
211-3266	1.382	4.346	.2354	45°	1G	211-4019	1.023	3.971	.2585	45°	1G
211-3267	1.181	3.632	.2153	45°	1G	211-4020	1.732	5.470	.0274	45°	1G
211-3269	1.652	3.866	.3100	45°	1G	211-4021	1.457	5.146	.2740	45°	1G
211-3270	1.297	4.778	.2750	45°	1G	211-4022	1.732	5.285	.2746	45°	1G
211-3272	1.339	4.080	.2592	45°	1G	211-4023	1.457	5.000	.2738	45°	1G
211-3275	1.600	4.901	.3415	44.5°	2G	211-4024	1.397	4.228	.2339	45°	1G
211-3280	1.221	3.632	.2350	45°	1G	211-4025	1.142	4.263	.2329	45°	1G
211-3281	1.476	5.047	.3130	45°	1G	211-4026	1.461	4.852	.2740	45°	3G
211-3282	1.560	4.750	.3569	44.5°	1G	211-4027	1.862	4.840	.2752	45°	3G
211-3283	1.084	4.201	.2578	45°	1G	211-4028	1.224	4.155	.2592	45°	1G
211-3286	1.142	4.862	.2148	45°	1G	211-4029	1.181	4.338	.2354	45°	1G
211-3287	1.414	4.484	.2750	45°	1G	211-4030	1.063	4.480	.2345	45°	1G
211-3288	1.575	4.820	.3130	45°	1G	211-4031	1.090	3.898	.2348	45°	1G
211-3289	1.071	3.787	.2350	45°	1G	211-4032	1.375	4.186	.2588	45°	1G
211-3294	1.205	4.047	.2348	45°	1G	211-4033	1.259	4.413	.2161	45°	1G
211-3295	1.142	4.044	.2579	45°	1G	211-4034	1.259	3.874	.2362	45°	1G
211-3296	1.073	3.727	.2352	45°	1G	211-4035	1.299	4.518	.2157	45°	1G
211-3300	1.653	4.983	.3419	44.5°	1G	211-4036	.945	3.646	.2146	45°	1G
211-3305	2.350	9.392	.3717	30°	2G	211-4037	1.232	3.892	.2736	45°	1G
211-3306	1.896	5.308	.3717	30°	2G	211-4038	1.240	3.534	.2350	45°	1G
211-3307	1.804	5.683	.3715	45°	2G	211-4039	1.089	3.543	.2354	45°	1G
211-3311	2.220	7.550	.4948	30°	SG	211-4040	.965	3.466	.2351	45°	1G
211-3313	1.576	8.498	.3421	30°	SG	211-4041	.984	3.646	.2146	45°	1G
211-3315	1.673	6.940	.3789	30°	1G	211-4042	.945	3.650	.2154	45°	1G
211-3316	1.673	7.690	.3789	30°	1G	211-4043	1.298	3.990	.2350	45°	1G
211-3320	1.570	6.656	.4340	45°	2G	211-4044	1.024	4.565	.2148	45°	1G
211-3321	2.227	8.820	.4960	45°	2G	211-4045	1.104	4.635	.2146	45°	1G
211-3323	2.005	8.125	.4960	45°	2G	211-4046	1.181	4.668	.2159	45°	1G
211-3324	2.350	9.390	.4955	29°	TG	211-4047	.921	4.625	.2165	45°	1G
211-3326	1.771	6.563	.3720	30°	2G	211-4048	1.260	3.906	.2339	45°	1G
211-3327	2.625	10.198	.5597	45°	1G	211-4049	1.259	4.035	.0236	45°	1G
211-3329	1.500	5.745	.3704	45°	2G	211-4050	1.081	4.126	.2349	45°	3G
211-3331	1.269	4.361	.3404	45°	1G	211-4051	1.260	4.141	.2346	45°	1G
211-3333	2.005	8.125	.4960	44°	2G	211-4052	1.339	3.898	.2348	45°	1G
211-3335	2.031	6.732	.4341	30°	1G	211-4053	1.181	3.955	.2347	45°	1G
211-3338	2.505	9.390	.3717	30°	2G	211-4054	1.102	4.102	.2347	45°	1G
211-3339	2.020	5.371	.3717	30°	2G	211-4055	1.091	3.636	.2156	45°	1G
211-3343	2.220	7.545	.4950	30°	SG	211-4056	1.312	4.435	.2746	45°	1G
211-3345	1.732	8.498	.3421	30°	SG	211-4057	.984	4.504	.2353	45°	1G
211-3346	1.835	5.278	.3100	30°	1G	211-4058	1.339	3.763	.3125	45°	1G
211-3347	1.673	7.690	.3789	30°	1G	211-4059	1.181	3.629	.0216	43°	1G
211-3350	2.028	7.788	.4365	44°	TG	211-4060	1.441	3.989	.2146	45°	1G
211-3351	2.645	8.820	.4970	30°	2G	211-4061	1.102	3.515	.2344	45°	1G
211-3352	2.557	8.125	.4970	30°	2G	211-4062	1.339	3.991	.2352	45°	1G
211-3353	2.505	9.390	.4960	30°	1G	211-4063	1.339	3.499	.2348	45°	1G
211-3354	2.750	10.200	.5620	45°	1G	211-4064	.986	3.147	.2144	45°	1G
211-3355	1.701	5.239	.3136	45°	1G	211-4065	1.149	3.630	.2154	45°	1G
211-3357	1.475	5.830	.3424	45°	1G	211-4066	1.063	3.955	.2351	45°	1G
211-3358	1.662	4.375	.3416	45°	1G	211-4067	1.260	3.963	.2353	45°	1G
211-4000	1.130	4.614	.2380	45°	1G	211-4068	.965	3.710	.2351	45°	1G
211-4001	1.309	4.513	.2340	45°	1G	211-4069	1.063	4.067	.2755	45°	3G
211-4002	1.420	4.680	.2740	45°	2G	211-4070	1.221	4.094	.2755	45°	3G
211-4003	1.752	4.751	.2750	45°	3G	211-4071	1.094	4.178	.2329	45°	3G
211-4004	1.370	4.399	.2340	45°	1G	211-4072	1.331	4.257	.2340	45°	3G
211-4005	1.201	4.324	.2328	45°	1G	211-4073	1.915	4.481	.2734	45°	3G
211-4006	1.718	4.713	.3139	45°	1G	211-4074	1.457	4.539	.2722	45°	3G
211-4007	1.425	4.736	.3132	45°	1G	211-4075	1.102	3.801	.2369	45°	1G
211-4008	2.830	10.883	.5595	30°	2G	211-4076	1.260	3.823	.2376	45°	1G
211-4009	2.830	10.883	.5593	30°	2G	211-4077	1.457	5.108	.3151	45°	3G
211-4010	1.510	5.742	.3708	44°	2G	211-4078	1.732	5.268	.3162	45°	3G
211-4011	4.435	12.625	.8700	30°	1G	211-4079	1.680	5.805	.3122	30°	1G
211-4012	3.776	12.625	.8700	30°	1G	211-4080	1.680	5.799	.3122	37°	1G
211-4013	2.831	10.884	.5580	20°	2G	211-4081	1.635	5.702	.4340	44°	1G
211-4014	1.300	4.432	.2355	45°	1G	211-4082	1.750	6.428	.4025	45°	2G
211-4015	1.300	3.980	.2576	45°	1G	211-4083	1.875	7.117	.4505	20°	2G

## VALVE NUMERICAL SPECIFICATIONS

Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type
211-4084	1.940	4.880	.3410	45°	1G	211-4139	1.073	3.755	.2155	45°	1G
211-4085	1.673	5.254	.3095	30°	1G	211-4140	1.299	3.786	.2354	45°	1G
211-4086	1.850	6.178	.3720	30°	1G	211-4141	1.122	3.681	.2353	45°	1G
211-4087	2.008	6.060	.3730	30°	1G	211-4142	1.318	4.054	.2350	45°	1G
211-4088	1.232	3.744	.2343	44°	1G	211-4143	1.260	3.860	.2350	45°	1G
211-4089	1.417	3.840	.2350	44°	1G	211-4144	1.083	3.862	.2350	45°	1G
211-4090	1.535	5.112	.3718	45°	2G	211-4145	1.140	4.019	.2350	45°	1G
211-4091	1.272	3.996	.2738	45°	1G	211-4146	1.280	3.976	.2344	45°	1G
211-4092	1.081	3.967	.2732	45°	1G	211-4147	1.102	3.983	.2344	45°	1G
211-4093	1.575	5.469	.2732	45°	1G	211-4148	1.370	4.399	.2340	45°	3G
211-4094	1.339	5.475	.2730	45°	1G	211-4149	1.120	4.324	.2329	45°	3G
211-4095	1.910	4.911	.3110	46°	3G	211-4150	1.130	4.614	.2329	45°	3G
211-4096	1.500	4.939	.3108	46°	3G	211-4151	1.309	4.513	.2340	45°	3G
211-4097	1.260	4.020	.2347	45°	3G	211-4152	1.398	5.023	.2722	45°	4G
211-4098	1.142	3.632	.2340	45°	3G	211-4153	1.890	4.969	.2734	45°	4G
211-4099	1.940	4.864	.3410	45°	1G	211-4154	1.786	5.992	.3714	45°	1G
211-4100	1.735	4.787	.2750	45°	3G	211-4155	1.786	5.992	.3722	60°	1G
211-4101	1.791	5.021	.3128	45°	2G	211-4156	1.221	3.445	.2354	45°	1G
211-4102	1.476	5.045	.3116	45°	4G	211-4157	1.220	4.148	.2354	45°	1G
211-4103	1.258	3.665	.2350	45°	3G	211-4158	1.031	4.150	.2350	45°	1G
211-4104	1.062	3.661	.2346	45°	3G	211-4160	1.142	4.496	.2147	45°	1G
211-4105	1.378	4.510	.2356	45°	3G	211-4161	1.339	4.567	.2161	45°	1G
211-4106	1.181	4.546	.2346	45°	3G	211-4162	1.260	3.485	.2155	45°	1G
211-4108	1.086	3.741	.2350	45°	1G	211-4163	1.081	3.491	.2154	45°	1G
211-4109	1.920	5.728	.3115	46°	1G	211-4164	1.338	4.088	.2347	45°	1G
211-4110	1.624	5.743	.3115	46°	1G	211-4165	1.142	4.073	.2344	45°	1G
211-4111	1.023	4.545	.2346	44°	3G	211-4166	1.850	7.951	.3717	30°	2G
211-4112	1.260	4.520	.2356	44°	3G	211-4167	1.646	7.953	.3717	45°	2G
211-4113	1.181	4.578	.2740	44°	3G	211-4168	1.772	5.157	.3720	45°	2G
211-4114	1.456	5.337	.2750	44°	3G	211-4169	1.575	5.157	.3720	45°	2G
211-4115	1.308	4.169	.2335	45°	1G	211-4179	1.720	5.395	.3711	45°	1G
211-4116	1.142	3.564	.2335	45°	1G	211-4181	1.457	4.149	.2347	44°	3G
211-4117	1.842	5.070	.3419	44°	1G	211-4182	1.299	4.907	.2756	30°	1G
211-4118	1.661	4.637	.2750	45°	3G	211-4183	1.299	4.893	.2756	30°	1G
211-4119	1.782	4.840	.2750	45°	3G	211-4198	1.417	4.397	.2362	45°	1G
211-4120	1.339	4.622	.2740	45°	3G	211-4199	1.378	4.397	.2360	45°	1G
211-4121	1.103	3.678	.2335	45°	1G	211-4201	1.200	4.331	.2360	45°	1G
211-4122	1.437	4.516	.2734	45°	3G	211-4202	1.169	4.616	.2362	45°	1G
211-4123	1.500	4.807	.2740	45°	3G	211-4203	1.309	4.525	.2360	45°	1G
211-4124	1.382	4.901	.3137	45°	1G	211-4204	1.122	4.173	.2559	45°	1G
211-4125	1.890	4.869	.3136	45°	1G	211-4205	1.102	4.173	.2560	45°	1G
211-4126	1.102	3.819	.2350	45°	1G	211-4206	1.220	4.154	.2560	45°	1G
211-4127	1.319	3.740	.2354	45°	1G	211-4207	1.240	4.154	.2560	45°	1G
211-4128	1.476	4.073	.2352	45°	1G	211-4208	1.338	4.029	.2165	45°	1G
211-4129	1.181	4.210	.2153	45°	1G	211-4209	1.318	4.029	.2165	45°	1G
211-4130	1.378	4.201	.2155	45°	1G	211-4210	1.299	4.029	.2165	45°	1G
211-4131	1.122	3.706	.2352	45°	1G	211-4211	1.142	4.035	.2165	45°	1G
211-4132	1.161	4.088	.2350	45°	1G	211-4212	1.122	4.035	.2165	45°	1G
211-4133	1.496	4.824	.3160	45°	1G	211-4213	1.102	4.035	.2165	45°	1G
211-4134	1.181	4.007	.2354	45°	1G	211-4214	1.417	4.207	.2165	45°	1G
211-4135	1.181	4.028	.2343	45°	1G	211-4215	1.378	4.207	.2165	45°	1G
211-4136	1.220	3.978	.2350	45°	1G	211-4216	1.220	4.216	.2165	45°	1G
211-4137	1.102	3.977	.2345	45°	1G	211-4217	1.181	4.216	.2165	45°	1G
211-4138	1.339	3.758	.2157	45°	1G						

## VALVE PROGRESSIVE SIZE CHART

Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number
.472	3.511	.2590	45	1G	211-2671	1.122	4.173	.2559	45	1G	211-4204
.472	3.692	.2590	45	1G	211-2653	1.125	5.155	.3720	45	2G	211-1201
.472	3.885	.2590	45	1G	211-2657	1.130	4.614	.2329	45	3G	211-4150
.906	3.382	.3100	45	1G	211-1225	1.130	4.614	.2328	45	1G	211-4000
.921	4.625	.2165	45	1G	211-4047	1.140	3.984	.3130	45	1G	211-2199
.945	3.646	.2146	45	1G	211-4036	1.140	3.990	.3130	45	TG	211-1441
.945	3.650	.2154	45	1G	211-4042	1.140	4.019	.2350	45	1G	211-4145
.965	3.466	.2351	45	1G	211-4040	1.140	4.084	.3130	45	1G	211-1313
.965	3.710	.2351	45	1G	211-4068	1.141	4.488	.2580	45	1G	211-2668
.967	3.618	.2350	45	1G	211-3238	1.142	3.564	.2335	45	1G	211-4116
.984	3.646	.2146	45	1G	211-4041	1.142	3.632	.2340	45	3G	211-4098
.984	4.504	.2353	45	1G	211-4057	1.142	4.035	.2165	45	1G	211-4211
.984	4.675	.2148	45	1G	211-3236	1.142	4.044	.2579	45	1G	211-3295
.986	3.147	.2144	45	1G	211-4064	1.142	4.073	.2344	45	1G	211-4165
1.007	3.925	.2360	45	1G	211-2590	1.142	4.263	.2329	45	1G	211-4025
1.015	3.938	.3130	45	D	211-1141	1.142	4.492	.2354	45	1G	211-4018
1.015	4.031	.3128	45	D	211-1095	1.142	4.496	.2147	45	1G	211-4160
1.015	4.075	.3130	45	1G	211-2075	1.142	4.526	.2160	45	1G	211-3235
1.023	3.971	.2585	45	1G	211-4019	1.142	4.578	.2360	45	1G	211-3181
1.023	4.545	.2346	44	3G	211-4111	1.142	4.862	.2148	45	1G	211-3286
1.024	4.565	.2148	45	1G	211-4044	1.142	4.920	.2148	45	1G	211-3224
1.031	4.150	.2350	45	1G	211-4158	1.142	4.959	.2722	45	3G	211-3214
1.062	3.661	.2346	45	3G	211-4104	1.149	3.630	.2154	45	1G	211-4065
1.062	4.127	.2580	45	1G	211-3200	1.156	4.942	.3410	45	1G	211-1295
1.062	4.436	.2590	45	1G	211-2660	1.161	4.088	.2350	45	1G	211-4132
1.063	3.876	.2350	44	1G	211-3246	1.164	4.080	.2340	45	1G	211-3070
1.063	3.955	.2351	45	1G	211-4066	1.169	4.616	.2362	45	1G	211-4202
1.063	4.067	.2755	45	3G	211-4069	1.180	4.160	.2590	45	1G	211-3199
1.063	4.480	.2345	45	1G	211-4030	1.181	3.598	.2350	45	1G	211-3237
1.071	3.787	.2350	45	1G	211-3289	1.181	3.629	.0216	43	1G	211-4059
1.073	3.727	.2352	45	1G	211-3296	1.181	3.632	.2153	45	1G	211-3267
1.073	3.755	.2155	45	1G	211-4139	1.181	3.635	.2350	45	1G	211-3258
1.081	3.491	.2154	45	1G	211-4163	1.181	3.955	.2347	45	1G	211-4053
1.081	3.967	.2732	45	1G	211-4092	1.181	4.007	.2354	45	1G	211-4134
1.081	4.126	.2349	45	3G	211-4050	1.181	4.028	.2343	45	1G	211-4135
1.083	3.862	.2350	45	1G	211-4144	1.181	4.210	.2153	45	1G	211-4129
1.084	4.201	.2578	45	1G	211-3283	1.181	4.216	.2165	45	1G	211-4217
1.086	3.741	.2350	45	1G	211-4108	1.181	4.310	.2750	45	1G	211-2734
1.089	3.543	.2354	45	1G	211-4039	1.181	4.338	.2354	45	1G	211-4029
1.090	3.898	.2348	45	1G	211-4031	1.181	4.436	.2590	45	1G	211-2659
1.090	5.552	.2480	30	1G	211-1863	1.181	4.456	.2740	45	1G	211-2665
1.091	3.636	.2156	45	1G	211-4055	1.181	4.546	.2346	45	3G	211-4106
1.094	3.395	.3100	45	1G	211-1142	1.181	4.550	.2740	45	1G	211-3176
1.094	4.178	.2329	45	3G	211-4071	1.181	4.566	.2740	45	1G	211-2571
1.095	5.550	.2480	30	1G	211-2536	1.181	4.578	.2740	44	3G	211-4113
1.102	3.307	.2160	45	1G	211-3178	1.181	4.668	.2159	45	1G	211-4046
1.102	3.515	.2344	45	1G	211-4061	1.181	4.744	.2590	45	1G	211-2669
1.102	3.801	.2369	45	1G	211-4075	1.185	3.976	.2580	45	1G	211-2507
1.102	3.819	.2350	45	1G	211-4126	1.185	4.086	.3130	45	1G	211-2291
1.102	3.977	.2345	45	1G	211-4137	1.185	5.538	.3100	30	1G	211-2462
1.102	3.983	.2344	45	1G	211-4147	1.198	4.616	.3120	45	1G	211-3041
1.102	4.035	.2165	45	1G	211-4213	1.199	4.156	.2576	45	1G	211-4017
1.102	4.102	.2347	45	1G	211-4054	1.200	3.921	.2360	45	1G	211-2589
1.102	4.130	.2580	45	1G	211-3187	1.200	4.322	.2570	45	1G	211-3059
1.102	4.171	.2580	45	1G	211-3186	1.200	4.331	.2360	45	1G	211-4201
1.102	4.173	.2560	45	1G	211-4205	1.201	4.091	.2350	45	1G	211-3240
1.102	4.508	.2580	45	1G	211-2667	1.201	4.324	.2328	45	1G	211-4005
1.103	3.678	.2335	45	1G	211-4121	1.203	4.015	.3140	30	D	211-1072
1.103	4.037	.2148	45	1G	211-3230	1.203	4.016	.3140	30	1G	211-2333
1.103	4.120	.2735	45	1G	211-3034	1.203	4.350	.3390	45	1G	211-1777
1.104	4.635	.2146	45	1G	211-3239	1.203	4.985	.3390	45	1G	211-1269
1.104	4.635	.2146	45	1G	211-4045	1.203	5.160	.3400	45	1G	211-1473
1.106	3.866	.2730	45	1G	211-3226	1.203	5.175	.3380	45	D	211-1589
1.120	4.324	.2329	45	3G	211-4149	1.203	5.190	.3380	45	1G	211-2035
1.120	5.570	.3420	45	1G	211-1991	1.203	5.215	.3390	45	1G	211-1801
1.122	3.681	.2353	45	1G	211-4141	1.205	4.047	.2348	45	1G	211-3294
1.122	3.706	.2352	45	1G	211-4131	1.218	4.830	.3410	45	1G	211-1081
1.122	4.035	.2165	45	1G	211-4212	1.220	3.978	.2350	45	1G	211-4136

## VALVE PROGRESSIVE SIZE CHART

Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number
1.220	4.114	.3150	45	3G	211-2555	1.300	4.680	.3420	30	1G	211-2201
1.220	4.140	.2740	45	1G	211-2746	1.300	6.063	.3720	45	1G	211-1719
1.220	4.148	.2354	45	1G	211-4157	1.303	4.620	.3130	45	1G	211-2271
1.220	4.154	.2560	45	1G	211-4206	1.304	4.744	.3410	45	1G	211-2744
1.220	4.212	.2750	45	1G	211-2587	1.307	4.726	.3410	45	2G	211-2454
1.220	4.216	.2165	45	1G	211-4216	1.308	4.169	.2335	45	1G	211-4115
1.221	3.445	.2354	45	1G	211-4156	1.309	4.513	.2340	45	1G	211-4001
1.221	3.632	.2350	45	1G	211-3280	1.309	4.513	.2340	45	3G	211-4151
1.221	3.969	.2561	45	1G	211-4016	1.309	4.525	.2360	45	1G	211-4203
1.221	4.094	.2755	45	3G	211-4070	1.310	5.929	.3410	30	2G	211-2543
1.222	3.983	.2750	45	1G	211-3242	1.311	3.589	.3130	45	3G	211-3227
1.224	4.155	.2592	45	1G	211-4028	1.312	4.435	.2746	45	1G	211-4056
1.229	3.592	.3127	45	3G	211-3220	1.313	4.771	.3090	45	1G	211-1187
1.232	3.744	.2343	44	1G	211-4088	1.313	4.906	.3410	45	1G	211-1592
1.232	3.892	.2736	45	1G	211-4037	1.313	5.160	.3730	45	2G	211-1130
1.239	4.265	.3090	45	3G	211-2115	1.313	5.281	.3410	45	2G	211-1703
1.240	3.534	.2350	45	1G	211-4038	1.315	4.500	.3120	45	1G	211-2185
1.240	4.154	.2560	45	1G	211-4207	1.315	5.987	.3410	30	2G	211-2544
1.240	4.310	.2750	45	1G	211-2737	1.318	4.029	.2165	45	1G	211-4209
1.250	4.438	.3090	45	1G	211-2548	1.318	4.054	.2350	45	1G	211-4142
1.250	4.770	.3090	45	1G	211-1375	1.319	3.740	.2354	45	1G	211-4127
1.255	5.050	.3720	45	2G	211-1199	1.328	4.330	.3410	30	1G	211-1776
1.258	3.665	.2350	45	3G	211-4103	1.328	4.950	.3410	30	1G	211-1168
1.258	4.405	.3150	45	3G	211-2125	1.328	5.180	.3390	45	1G	211-1073
1.259	3.874	.2362	45	1G	211-4034	1.328	5.195	.3390	45	D	211-1053
1.259	4.035	.0236	45	1G	211-4049	1.331	4.257	.2340	45	3G	211-4072
1.259	4.065	.2740	45	1G	211-3069	1.338	4.023	.2580	45	1G	211-2506
1.259	4.413	.2161	45	1G	211-4033	1.338	4.029	.2165	45	1G	211-4208
1.259	4.484	.2580	45	1G	211-2664	1.338	4.088	.2347	45	1G	211-4164
1.260	3.485	.2155	45	1G	211-4162	1.338	4.300	.3120	45	1G	211-2385
1.260	3.823	.2376	45	1G	211-4076	1.338	4.307	.3130	45	1G	211-2593
1.260	3.842	.2350	44	1G	211-3245	1.338	4.318	.2590	45	1G	211-3058
1.260	3.860	.2350	45	1G	211-4143	1.338	4.545	.2740	45	1G	211-3063
1.260	3.906	.2339	45	1G	211-4048	1.339	3.499	.2348	45	1G	211-4063
1.260	3.963	.2353	45	1G	211-4067	1.339	3.743	.2353	45	1G	211-3262
1.260	4.020	.2347	45	3G	211-4097	1.339	3.758	.2157	45	1G	211-4138
1.260	4.100	.2739	45	1G	211-3210	1.339	3.763	.3125	45	1G	211-4058
1.260	4.141	.2346	45	1G	211-4051	1.339	3.898	.2348	45	1G	211-4052
1.260	4.520	.2356	44	3G	211-4112	1.339	3.991	.2352	45	1G	211-4062
1.261	4.144	.2740	45	1G	211-3033	1.339	4.080	.2592	45	1G	211-3272
1.264	3.760	.2745	45	1G	211-3225	1.339	4.411	.2160	45	1G	211-3221
1.265	4.260	.3100	45	1G	211-1705	1.339	4.567	.2161	45	1G	211-4161
1.269	4.361	.3404	45	1G	211-3331	1.339	4.622	.2740	45	3G	211-3067
1.270	4.160	.3150	45	3G	211-2169	1.339	4.622	.2740	45	3G	211-4120
1.270	5.325	.3390	45	1G	211-1807	1.339	4.780	.2745	45	1G	211-3261
1.272	3.996	.2738	45	1G	211-4091	1.339	5.475	.2730	45	1G	211-4094
1.278	3.977	.3140	30	D	211-1206	1.340	4.356	.3130	45	1G	211-2335
1.278	4.506	.2736	45	1G	211-3222	1.342	4.830	.3410	45	1G	211-1066
1.280	3.976	.2344	45	1G	211-4146	1.342	4.940	.3410	45	1G	211-1190
1.280	4.390	.3140	45	1G	211-3027	1.344	5.271	.3150	45	3G	211-2709
1.280	4.558	.2750	45	1G	211-3062	1.348	4.470	.3100	45	2G	211-1573
1.281	4.700	.3410	45	TG	211-1305	1.358	4.098	.3153	45	3G	211-3244
1.281	4.780	.3100	45	2G	211-1037	1.358	4.098	.3303	45	3G	211-3244.015
1.281	4.805	.3100	45	M	211-1586	1.360	4.797	.3720	45	2G	211-1905
1.281	4.815	.3410	45	1G	211-1161	1.360	4.800	.3720	45	4G	211-1701
1.297	4.204	.3160	45	1G	211-2328	1.370	4.399	.2340	45	1G	211-4004
1.297	4.778	.2750	45	1G	211-3270	1.370	4.399	.2340	45	3G	211-4148
1.298	3.990	.2350	45	1G	211-4043	1.375	4.021	.3126	45	1G	211-3197
1.299	3.786	.2354	45	1G	211-4140	1.375	4.050	.3130	45	1G	211-2772
1.299	4.029	.2165	45	1G	211-4210	1.375	4.186	.2588	45	1G	211-4032
1.299	4.033	.2157	45	1G	211-3229	1.375	4.526	.3090	45	1G	211-2546
1.299	4.518	.2157	45	1G	211-4035	1.375	4.565	.3100	45	1G	211-1757
1.299	4.893	.2756	30	1G	211-4183	1.375	4.645	.3410	45	1G	211-1947
1.299	4.907	.2756	30	1G	211-4182	1.375	4.680	.3420	45	2G	211-1771
1.300	3.980	.2576	45	1G	211-4015	1.375	4.780	.3420	45	2G	211-1751
1.300	4.110	.2590	45	1G	211-3185	1.375	4.940	.3410	45	1G	211-1871
1.300	4.432	.2355	45	1G	211-4014	1.375	4.940	.3410	45	1G	211-1993
1.300	4.578	.2590	45	1G	211-3182	1.375	5.080	.3410	45	1G	211-1019

## VALVE PROGRESSIVE SIZE CHART

Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number
1.375	5.360	.3410	45	1G	211-1021	1.437	4.320	.2750	46	1G	211-2736
1.375	5.450	.3410	45	1G	211-1485	1.437	4.516	.2734	45	3G	211-4122
1.375	5.534	.3390	45	1G	211-2759	1.437	4.785	.3100	45	2G	211-1038
1.375	6.060	.3720	45	1G	211-2129	1.438	4.906	.3410	45	1G	211-1584
1.376	4.620	.3120	45	3G	211-2740	1.438	4.952	.3425	45	1G	211-2028
1.377	4.255	.2740	45	1G	211-2579	1.440	4.855	.3730	45	1G	211-2107
1.377	4.503	.2590	45	1G	211-2656	1.441	3.989	.2146	45	1G	211-4060
1.378	3.307	.2160	45	1G	211-3177	1.441	4.550	.2740	45	1G	211-3219
1.378	3.818	.2350	45	1G	211-3064	1.444	5.998	.3710	30	1G	211-2512
1.378	4.103	.3140	45	1G	211-3195	1.450	4.865	.3410	45	1G	211-1915
1.378	4.201	.2155	45	1G	211-4130	1.450	4.865	.3420	45	1G	211-2011
1.378	4.207	.2165	45	1G	211-4215	1.451	4.942	.3410	45	1G	211-2706
1.378	4.283	.3120	45	1G	211-2768	1.453	4.260	.3120	45	1G	211-3192
1.378	4.397	.2360	45	1G	211-4199	1.454	4.985	.3730	45	2G	211-2010
1.378	4.439	.3140	45	1G	211-2405	1.455	5.688	.3708	45	1G	211-3198
1.378	4.510	.2356	45	3G	211-4105	1.455	5.641	.3720	45	1G	211-2762
1.378	4.516	.2733	45	3G	211-3211	1.456	4.425	.3138	45	1G	211-2596
1.378	4.586	.3150	45	3G	211-2253	1.456	4.448	.3130	45	1G	211-2604
1.378	4.738	.3130	45	1G	211-2517	1.456	4.594	.2740	45	1G	211-2570
1.378	4.755	.2740	45	1G	211-2658	1.456	5.165	.3130	45	1G	211-2723
1.378	4.783	.2730	45	1G	211-2663	1.456	5.244	.3120	45	1G	211-2530
1.380	4.807	.3410	45	4G	211-2693	1.456	5.337	.2750	44	3G	211-4114
1.380	4.919	.3410	45	1G	211-2342	1.457	4.149	.2347	44	3G	211-4181
1.382	4.346	.2354	45	1G	211-3266	1.457	4.539	.2722	45	3G	211-4074
1.382	4.622	.3130	45	1G	211-2281	1.457	5.000	.2738	45	1G	211-4023
1.382	4.901	.3120	45	1G	211-2584	1.457	5.108	.3151	45	3G	211-4077
1.382	4.901	.3137	45	1G	211-4124	1.457	5.146	.2740	45	1G	211-4021
1.384	4.015	.2600	45	1G	211-3179	1.457	5.165	.3130	45	1G	211-3212
1.385	5.533	.3100	30	1G	211-2439	1.457	5.194	.3150	45	3G	211-2464
1.388	4.260	.3100	45	1G	211-1933	1.457	5.322	.3720	45	1G	211-1943
1.393	4.441	.3110	45	4G	211-2472	1.460	4.855	.3410	45	4G	211-2475
1.395	4.984	.3715	45	2G	211-1521	1.460	5.070	.3420	45	1G	211-2099
1.395	5.045	.3730	45	2G	211-1128	1.460	5.070	.3450	45	1G	211-2099.003
1.395	5.470	.3720	45	1G	211-2511	1.460	5.070	.3570	45	1G	211-2099.015
1.397	4.228	.2339	45	1G	211-4024	1.461	4.852	.2740	45	3G	211-4026
1.397	4.329	.2750	46	1G	211-2735	1.461	5.070	.3410	45	1G	211-2209
1.397	4.409	.3110	45	3G	211-2122	1.462	5.010	.3410	45	1G	211-2452
1.398	5.023	.2722	45	4G	211-4152	1.468	4.265	.3110	45	1G	211-1704
1.399	4.507	.3200	45	4G	211-3003	1.468	4.935	.3410	45	1G	211-1279
1.399	4.535	.3120	45	4G	211-2701	1.468	5.805	.3720	45	1G	211-1562
1.399	4.535	.3120	45	4G	211-2703	1.468	5.910	.3720	45	1G	211-1549
1.403	6.350	.3410	45	1G	211-1803	1.475	5.830	.3424	45	1G	211-3357
1.406	4.890	.3720	45	4G	211-1937	1.476	4.073	.2352	45	1G	211-4128
1.406	4.890	.3720	45	4G	211-2151	1.476	4.974	.3116	45	4G	211-3206
1.406	4.892	.3720	45	1G	211-2550	1.476	5.045	.3116	45	4G	211-4102
1.407	4.840	.3405	45	2G	211-1591	1.476	5.047	.3130	45	1G	211-3281
1.414	4.484	.2750	45	1G	211-3287	1.477	4.863	.3720	45	1G	211-3039
1.415	4.330	.3100	30	2G	211-1281	1.478	4.924	.3130	45	3G	211-2320
1.415	5.290	.3410	30	1G	211-1806	1.480	5.356	.3090	30	1G	211-2547
1.416	4.140	.2740	45	1G	211-2747	1.484	3.920	.3100	30	D	211-1568
1.417	3.840	.2350	44	1G	211-4089	1.484	6.240	.4010	45	1G	211-1811
1.417	4.207	.2165	45	1G	211-4214	1.490	4.725	.3410	45	1G	211-2727
1.417	4.212	.2750	45	1G	211-2588	1.496	4.065	.2740	45	1G	211-3068
1.417	4.271	.3150	45	1G	211-2594	1.496	4.142	.3120	45	1G	211-3189
1.417	4.334	.3120	45	1G	211-2676	1.496	4.177	.3140	45	1G	211-2711
1.417	4.397	.2362	45	1G	211-4198	1.496	4.255	.3120	45	1G	211-2505
1.417	4.401	.3160	45	1G	211-2679	1.496	4.390	.3140	30	1G	211-3026
1.417	4.484	.3130	45	1G	211-2428	1.496	4.824	.3160	45	1G	211-4133
1.417	4.550	.2750	45	1G	211-3175	1.496	4.928	.3130	45	1G	211-2565
1.417	4.607	.3130	45	1G	211-3040	1.496	5.110	.3720	45	2G	211-2554
1.418	4.137	.3150	45	3G	211-2696	1.498	4.072	.3140	45	1G	211-2719
1.418	4.296	.3130	45	1G	211-2318	1.500	3.596	.3138	45	3G	211-3228
1.420	4.580	.2740	45	3G	211-4002	1.500	4.350	.3130	45	1G	211-2721
1.425	4.736	.3130	45	1G	211-2725	1.500	4.542	.3130	45	1G	211-2738
1.425	4.736	.3132	45	1G	211-4007	1.500	4.620	.3420	45	2G	211-2364
1.425	4.736	.3410	45	1G	211-2501	1.500	4.717	.3410	45	1G	211-2728
1.437	4.076	.2750	44	1G	211-2764	1.500	4.775	.3410	45	4G	211-2197
1.437	4.091	.2742	45	1G	211-3207	1.500	4.807	.2740	45	3G	211-4123



## VALVE PROGRESSIVE SIZE CHART

Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number
1.500	4.820	.3420	45	1G	211-1673	1.550	5.016	.3730	45	1G	211-2207
1.500	4.820	.3420	45	1G	211-1969	1.554	5.740	.3720	45	2G	211-1783
1.500	4.902	.3720	45	4G	211-2360	1.556	3.618	.3138	45	3G	211-3217
1.500	4.920	.3410	45	1G	211-1679	1.556	5.430	.3700	46	1G	211-2461
1.500	4.920	.3410	45	1G	211-3234	1.560	4.750	.3569	44.5	1G	211-3282
1.500	4.923	.3443	45	2G	211-2486.003	1.560	4.815	.3420	45	1G	211-1935
1.500	4.923	.3563	45	2G	211-2486.015	1.560	4.815	.3420	45	1G	211-1967
1.500	4.923	.3720	45	2G	211-2731	1.560	4.815	.3570	45	1G	211-1935.015
1.500	4.925	.3720	45	1G	211-2181	1.561	5.430	.3720	45	1G	211-1939
1.500	4.928	.3408	45	2G	211-2486	1.562	4.730	.3420	45	1G	211-1949
1.500	4.939	.3108	46	3G	211-4096	1.562	6.330	.3090	45	1G	211-1519
1.500	4.939	.3120	44	1G	211-3029	1.563	4.540	.3720	45	2G	211-1689
1.500	4.940	.3430	45	1G	211-2002	1.563	4.540	.3720	45	4G	211-1657
1.500	4.949	.3120	45	1G	211-2652	1.563	5.910	.3410	45	1G	211-1737
1.500	5.005	.3720	45	4G	211-1965	1.567	4.964	.3710	45	1G	211-2348
1.500	5.030	.3730	45	1G	211-2023	1.567	4.964	.3710	45	1G	211-2350
1.500	5.045	.3410	45	1G	211-1018	1.570	4.160	.3170	45	1G	211-2164
1.500	5.155	.3720	45	1G	211-1045	1.570	6.656	.4340	45	2G	211-3320
1.500	5.280	.3410	45	2G	211-1702	1.570	6.783	.3720	30	1G	211-3174
1.500	5.363	.3410	45	2G	211-1020	1.570	6.784	.4350	30	1G	211-3172
1.500	5.455	.3410	45	1G	211-1358	1.572	4.760	.3420	45	1G	211-2688
1.500	5.690	.4340	45	2G	211-1743	1.574	4.263	.3150	45	1G	211-2595
1.500	5.731	.3720	45	2G	211-1867	1.575	4.820	.3130	45	1G	211-3288
1.500	5.745	.3704	45	2G	211-3329	1.575	5.157	.3720	45	2G	211-4169
1.500	6.810	.3720	45	1G	211-2187	1.575	5.469	.2732	45	1G	211-4093
1.501	4.727	.3410	45	1G	211-3061	1.576	8.498	.3421	30	1G	211-3313
1.501	4.845	.3400	45	2G	211-1195	1.578	5.030	.3410	30	1G	211-1778
1.502	4.275	.3100	45	3G	211-2114	1.579	3.596	.3138	45	3G	211-3223
1.502	4.688	.3420	30	1G	211-2309	1.580	5.403	.3720	45	1G	211-3043
1.505	4.905	.3730	45	1G	211-3056	1.588	4.355	.3130	45	1G	211-2384
1.505	5.370	.4340	45	1G	211-1925	1.588	6.260	.3720	45	2G	211-1869
1.507	4.688	.3420	30	1G	211-2705	1.588	6.440	.3420	30	1G	211-1283
1.507	4.985	.3420	45	1G	211-3190	1.594	6.700	.4340	45	2G	211-1129
1.507	5.375	.3700	45	1G	211-2173	1.594	6.700	.4340	45	2G	211-2007
1.508	5.375	.3710	45	1G	211-1963	1.598	4.417	.3130	45	1G	211-2471
1.510	4.817	.3410	45	4G	211-2438	1.599	4.498	.3122	45	1G	211-2700
1.510	4.819	.3410	45	1G	211-1076	1.600	4.700	.3130	45	1G	211-2518
1.510	4.820	.3410	45	1G	211-1261	1.600	4.700	.3413	45	2G	211-2453
1.510	4.835	.3100	45	M	211-1557	1.600	4.890	.3720	45	4G	211-1625
1.510	4.980	.3410	45	TG	211-1325	1.600	4.900	.3410	45	1G	211-2021
1.510	4.985	.3410	45	TG	211-1303	1.600	4.900	.3410	45	1G	211-2037
1.510	5.095	.3410	45	1G	211-1885	1.600	4.901	.3415	44.5	2G	211-3275
1.510	5.742	.3708	44	2G	211-4010	1.600	5.005	.3720	45	4G	211-2085
1.510	5.820	.3410	45	TG	211-1775	1.600	5.006	.3720	45	2G	211-2213
1.511	4.498	.3100	45	1G	211-1194	1.600	5.677	.3719	52	1G	211-2562
1.513	5.406	.3720	45	1G	211-2053	1.600	5.803	.3708	45	1G	211-2356
1.516	5.050	.3720	30	1G	211-1717	1.598	4.498	.3128	45	1G	211-2702
1.516	5.155	.3410	30	1G	211-1058	1.604	6.352	.3420	45	2G	211-1802
1.516	5.160	.3410	30	D	211-1588	1.605	5.565	.3790	30	1G	211-2325
1.516	5.167	.3410	30	1G	211-2034	1.605	5.565	.3790	30	1G	211-2450
1.517	4.994	.3720	45	2G	211-3180	1.609	5.475	.3720	45	1G	211-1695
1.517	4.995	.3720	45	2G	211-2443	1.611	5.745	.3910	45	1G	211-2539
1.520	4.713	.3130	45	1G	211-3218	1.614	4.216	.2740	45	1G	211-2580
1.522	4.667	.3430	45	1G	211-2184	1.620	4.775	.3730	45	2G	211-1700
1.522	5.000	.3710	45	2G	211-2145	1.620	5.996	.3720	30	1G	211-2513
1.527	4.260	.3105	45	1G	211-1830	1.622	4.675	.3420	30	1G	211-2159
1.530	4.845	.3410	45	2G	211-1226	1.622	4.710	.3420	30	1G	211-2119
1.530	5.815	.3730	45	1G	211-1563	1.622	4.787	.3420	45	4G	211-2692
1.534	4.500	.3120	45	1G	211-2174	1.622	4.995	.3720	45	2G	211-2444
1.535	3.938	.3140	45	1G	211-2220	1.622	5.031	.3420	30	1G	211-2345
1.535	4.524	.2739	45.5	3G	211-3248	1.623	4.283	.3130	45	1G	211-2319
1.535	5.112	.3718	45	2G	211-4090	1.624	4.665	.3420	45	1G	211-1951
1.535	5.482	.3720	45	1G	211-2338	1.624	4.695	.3420	45	1G	211-1977
1.535	5.512	.3730	45	1G	211-3038	1.624	4.920	.3115	44	1G	211-3216
1.540	5.368	.3210	45	3G	211-3010	1.624	5.743	.3115	46	1G	211-4110
1.540	5.383	.3160	45	3G	211-2708	1.625	4.645	.3410	45	1G	211-1944
1.543	5.075	.3420	45	1G	211-2105	1.625	5.000	.3420	45	1G	211-2175
1.543	6.155	.3720	30	1G	211-3055	1.625	5.160	.3730	45	1G	211-2025

## VALVE PROGRESSIVE SIZE CHART

Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number
1.625	5.245	.3410	45	1G	211-2067	1.690	4.021	.3135	45	1G	211-3196
1.625	5.405	.3730	45	1G	211-2050	1.690	4.060	.3138	45	1G	211-2771
1.625	6.238	.4350	45	2G	211-2045	1.690	6.827	.3730	30	1G	211-3173
1.632	5.705	.4340	45	1G	211-1635	1.692	4.084	.2760	45	1G	211-2763
1.635	5.702	.4340	44	1G	211-4081	1.692	4.334	.3150	45	1G	211-2767
1.640	4.877	.3410	45	2G	211-1899	1.692	4.441	.3140	45	1G	211-2404
1.641	5.532	.3410	30	2G	211-2758	1.692	4.550	.3150	45	1G	211-2240
1.641	6.275	.3410	30	2G	211-1112	1.692	5.456	.3136	45	1G	211-2722
1.645	5.935	.3420	45	1G	211-1774	1.693	4.245	.3130	45	1G	211-2480
1.646	6.005	.3720	45	2G	211-2496	1.701	5.239	.3136	45	1G	211-3355
1.646	7.140	.3710	45	2G	211-2494	1.710	4.092	.3163	45	1G	211-3263
1.646	7.953	.3717	45	2G	211-4167	1.710	4.712	.3400	45	1G	211-2346
1.647	5.090	.3420	45	1G	211-1264	1.710	4.726	.3400	45	1G	211-2726
1.650	4.262	.3160	45	1G	211-2327	1.710	5.050	.3420	45	1G	211-2061
1.650	6.017	.3710	30	1G	211-2509	1.710	5.050	.3420	45	4G	211-2087
1.651	4.260	.3100	45	1G	211-1936	1.710	5.689	.3721	30	1G	211-2761
1.652	3.866	.3100	45	1G	211-3269	1.713	4.094	.3313	45	1G	211-3243.015
1.652	6.056	.3720	45	1G	211-1718	1.715	6.192	.3720	30	2G	211-2484
1.653	4.948	.2740	45	1G	211-2583	1.715	6.213	.3720	30	1G	211-2485
1.653	4.983	.3419	44.5	1G	211-3300	1.715	6.230	.3720	45	2G	211-1983
1.653	4.985	.3420	45	1G	211-2157	1.718	4.686	.3140	45	1G	211-2724
1.653	5.110	.3720	45	1G	211-2499	1.718	4.705	.3410	45	2G	211-2500
1.653	5.430	.3700	45	1G	211-1883	1.718	4.713	.3139	45	1G	211-4006
1.654	4.101	.3140	45	1G	211-3194	1.718	4.845	.3410	45	2G	211-1094
1.654	5.081	.3138	45	1G	211-3202	1.718	6.670	.4340	45	2G	211-1090
1.654	5.311	.3160	45	3G	211-2463	1.719	6.810	.3720	30	1G	211-2176
1.655	5.050	.3410	45	1G	211-2369	1.720	4.394	.3130	45	1G	211-2720
1.655	5.050	.3410	45	4G	211-2089	1.720	4.591	.3140	45	1G	211-2742
1.655	5.080	.3420	45	1G	211-2121	1.720	4.669	.3420	45	2G	211-2365
1.656	4.133	.3160	45	1G	211-2697	1.720	4.917	.3413	45	2G	211-1280
1.656	5.085	.3720	30	2G	211-1744	1.720	4.915	.3450	45	2G	211-1280.003
1.656	5.390	.3720	45	1G	211-1023	1.720	5.007	.3420	45	1G	211-2323
1.656	5.520	.3720	45	1G	211-1025	1.720	5.335	.3720	45	1G	211-2027
1.656	5.844	.3715	45	2G	211-1027	1.720	5.355	.3716	45	1G	211-2141
1.656	6.060	.3720	45	1G	211-1487	1.720	5.355	.3720	45	1G	211-2001
1.658	4.580	.3140	45	1G	211-2274	1.720	5.355	.3720	45	1G	211-2715
1.658	4.889	.3140	45	1G	211-2563	1.720	5.395	.3711	45	1G	211-4179
1.659	4.303	.3130	45	1G	211-2334	1.720	6.138	.3720	45	1G	211-2503
1.660	4.959	.3410	45	2G	211-2165	1.727	5.980	.3720	45	1G	211-2695
1.660	5.080	.3410	45	1G	211-2071	1.731	7.245	.4030	45	1G	211-1810
1.660	5.350	.3720	45	1G	211-2193	1.732	4.409	.3160	45	1G	211-2677
1.660	5.367	.3710	44	1G	211-2717	1.736	5.255	.3162	45	3G	211-4078
1.660	5.367	.3720	45	1G	211-2049	1.732	5.285	.2746	45	1G	211-4022
1.661	4.615	.3130	45	3G	211-2739	1.732	5.457	.3136	45	1G	211-3209
1.661	4.637	.2750	45	3G	211-4118	1.732	5.470	.0274	45	1G	211-4020
1.662	4.375	.3416	45	1G	211-3358	1.732	8.498	.3435	30	1G	211-3345
1.665	4.350	.3130	45	1G	211-2675	1.734	5.475	.4150	45	1G	211-2033
1.665	5.942	.3410	45	1G	211-2551	1.735	4.787	.2750	45	3G	211-4100
1.670	4.865	.3420	45	1G	211-1906	1.735	4.787	.3420	45	4G	211-2182
1.673	5.254	.3095	30	1G	211-4085	1.736	4.280	.3130	45	1G	211-3191
1.673	6.940	.3789	30	1G	211-3315	1.740	4.797	.3420	45	4G	211-2437
1.673	6.941	.3790	30	1G	211-2749	1.740	4.885	.3720	45	4G	211-2047
1.673	6.945	.3790	30	1G	211-2748	1.744	4.829	.3730	45	1G	211-2106
1.673	7.690	.3789	30	1G	211-3316	1.745	7.058	.4030	30	2G	211-1203
1.673	7.690	.3789	30	1G	211-3347	1.747	4.840	.3740	45	1G	211-2510
1.677	4.964	.3710	45	1G	211-2367	1.750	4.667	.3430	45	1G	211-2514
1.679	6.035	.3720	45	1G	211-2128	1.750	5.703	.4340	45	1G	211-1554
1.680	4.910	.3720	45	1G	211-2149	1.750	6.133	.3720	30	1G	211-2636
1.680	4.910	.3720	45	4G	211-2147	1.750	6.428	.4020	45	2G	211-2616
1.680	5.799	.3122	37	1G	211-4080	1.750	6.428	.4025	45	2G	211-4082
1.680	5.805	.3122	30	1G	211-4079	1.751	4.260	.3100	45	1G	211-2336
1.687	4.775	.3420	30	2G	211-1750	1.752	4.622	.2750	45	3G	211-3066
1.687	5.153	.3730	45	1G	211-2205	1.752	4.751	.2750	45	3G	211-4003
1.687	5.161	.3720	45	2G	211-1048	1.752	5.395	.3720	45	1G	211-1964
1.687	5.365	.3730	45	1G	211-2062	1.753	5.393	.3714	45	1G	211-2210
1.688	5.155	.3720	30	1G	211-1754	1.770	4.975	.3410	45	2G	211-2131
1.688	5.700	.3720	45	2G	211-1868	1.770	5.095	.3410	45	2G	211-2073
1.689	5.743	.3920	45	1G	211-2538	1.771	4.464	.3150	45	1G	211-2597

## VALVE PROGRESSIVE SIZE CHART

Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number
1.771	6.005	.3720	45	2G	211-2495	1.850	7.951	.3717	30	2G	211-4166
1.771	6.563	.3717	30	2G	211-2489	1.862	4.840	.2752	45	3G	211-4027
1.771	6.563	.3720	30	2G	211-3326	1.870	6.605	.4510	30	2G	211-2155
1.771	7.148	.3720	30	2G	211-2493	1.870	7.061	.4505	30	2G	211-1945
1.772	4.799	.3416	45	1G	211-3060	1.870	7.071	.4510	30	2G	211-2689
1.772	5.084	.3138	30	1G	211-3201	1.870	7.071	.4510	30	2G	211-2689B
1.772	5.157	.3720	45	2G	211-4168	1.875	4.665	.3430	45	1G	211-2162
1.772	5.312	.3720	45	2G	211-1940	1.875	4.740	.3430	45	1G	211-1948
1.777	5.750	.4340	45	TG	211-1411	1.875	5.010	.3730	45	1G	211-2024
1.780	4.810	.3420	45	1G	211-1970	1.875	5.021	.3430	45	1G	211-2344
1.780	4.865	.3420	45	1G	211-1932	1.875	5.350	.3720	45	1G	211-2097
1.780	4.870	.3420	45	1G	211-2016	1.875	6.391	.3415	30	2G	211-1292
1.780	4.975	.3730	45	2G	211-1966	1.875	6.665	.4340	30	1G	211-2625
1.780	4.975	.3780	45	2G	211-1966.005	1.875	6.708	.4340	45	1G	211-2638
1.780	5.110	.3420	45	1G	211-1834	1.875	7.117	.4505	20	2G	211-4083
1.780	6.130	.3740	30	1G	211-3050	1.878	5.689	.3719	60	1G	211-2561
1.780	6.260	.3720	45	2G	211-1870	1.880	4.981	.3720	45	4G	211-2148
1.781	4.750	.3420	45	1G	211-2687	1.880	4.981	.3725	45	2G	211-2142
1.781	4.820	.3410	45	1G	211-1934	1.890	4.869	.3136	45	1G	211-4125
1.781	4.820	.3440	45	1G	211-1934.003	1.890	4.969	.2734	45	4G	211-4153
1.781	4.820	.3560	45	1G	211-1934.015	1.890	6.855	.4980	30	1G	211-1443
1.781	5.055	.3420	45	1G	211-2080	1.892	5.406	.3720	45	1G	211-3042
1.781	5.072	.3720	30	2G	211-1746	1.894	6.869	.4960	30	1G	211-2482
1.782	4.840	.2750	45	3G	211-4119	1.895	6.563	.3720	30	2G	211-2490
1.782	4.840	.3420	45	4G	211-2474	1.896	5.308	.3717	30	2G	211-3306
1.782	4.942	.3420	45	1G	211-2707	1.896	5.477	.3720	30	2G	211-2492
1.782	5.070	.3420	45	1G	211-2208	1.896	5.477	.3720	30	2G	211-2753
1.786	5.500	.3730	45	1G	211-3037	1.902	6.148	.3720	45	2G	211-2502
1.786	5.992	.3714	45	1G	211-4154	1.902	6.245	.3720	45	2G	211-1992
1.786	5.992	.3722	60	1G	211-4155	1.909	4.911	.0311	45	1G	211-3028
1.787	4.889	.3720	30	4G	211-1658	1.910	4.911	.3110	46	3G	211-4095
1.787	4.899	.3720	30	1G	211-2549	1.910	4.911	.3115	45	1G	211-2650
1.787	4.900	.3720	30	4G	211-2152	1.915	4.481	.2734	45	3G	211-4073
1.789	5.157	.3710	45	1G	211-2349	1.920	4.898	.3410	30	2G	211-1900
1.789	5.157	.3710	45	1G	211-2361	1.920	4.906	.3115	44	1G	211-3213
1.791	4.949	.3127	45	2G	211-3205	1.920	5.728	.3115	46	1G	211-4109
1.791	5.021	.3128	45	2G	211-4101	1.924	5.960	.3720	45	1G	211-2694
1.800	4.721	.3134	45	1G	211-3215	1.925	5.110	.3420	45	1G	211-1378
1.804	5.683	.3700	45	2G	211-2456	1.760	4.684	.3139	45	1G	211-4099
1.804	5.683	.3715	45	2G	211-3307	1.940	4.880	.3414	45	2G	211-2072
1.805	5.743	.3710	45	1G	211-2435	1.940	4.880	.3410	45	1G	211-4084
1.805	6.101	.4340	44	1G	211-2560	1.940	4.880	.3410	45	2G	211-1850
1.805	6.345	.4340	45	1G	211-1515	1.940	4.880	.3414	45	2G	211-3250
1.805	6.345	.4340	45	2G	211-2191	1.940	4.880	.3440	45	1G	211-2072.003
1.808	5.735	.3720	30	2G	211-1782	1.940	4.880	.3560	45	1G	211-2072.015
1.810	4.920	.3150	45	3G	211-2317	1.940	5.230	.3710	45	1G	211-2716
1.811	4.212	.3130	45	1G	211-3188	1.940	6.150	.4350	45	2G	211-2044
1.811	4.260	.3140	45	1G	211-2710	1.960	4.980	.3420	45	2G	211-2160
1.811	4.338	.3130	45	1G	211-2504	1.960	5.090	.3420	30	1G	211-2070
1.811	4.524	.2745	45	3G	211-3247	1.970	5.225	.3730	45	1G	211-1694
1.811	4.980	.3730	45	2G	211-2146	1.970	5.787	.3720	30	1G	211-2355
1.811	5.109	.3410	45	1G	211-2497	1.982	5.195	.3415	44.5	1G	211-3257
1.811	5.942	.3730	45	1G	211-3204	1.985	7.805	.4970	45	1G	211-1153
1.812	5.515	.3720	45	1G	211-1024	1.995	4.670	.3430	45	1G	211-1950
1.812	5.848	.3715	45	2G	211-1026	1.995	4.707	.3430	45	1G	211-2014
1.812	5.942	.3410	30	1G	211-2552	2.000	4.790	.3730	45	1G	211-1162
1.812	6.083	.3720	45	1G	211-1360	2.000	4.980	.3420	45	1G	211-2168
1.822	5.157	.3720	30	2G	211-2637	2.000	5.140	.3730	45	1G	211-2026
1.822	5.170	.3720	30	1G	211-2649	2.000	5.230	.3420	45	1G	211-2066
1.835	5.278	.3100	30	1G	211-3346	2.000	5.875	.3410	30	1G	211-1738
1.839	6.016	.3720	30	1G	211-2508	2.000	6.428	.4030	45	2G	211-2617
1.840	4.881	.3410	45	1G	211-3233	2.000	7.867	.4970	44	1G	211-2111
1.840	4.912	.3410	45	2G	211-2357	2.005	8.125	.4960	44	2G	211-3333
1.840	5.235	.3720	45	1G	211-2048	2.005	8.125	.4960	45	2G	211-3323
1.842	5.070	.3419	44	1G	211-4117	2.008	6.060	.3730	30	1G	211-4087
1.844	4.600	.3730	45	2G	211-1656	2.020	4.880	.3410	45	1G	211-2022
1.844	5.070	.3420	45	1G	211-2104	2.020	4.985	.3730	45	4G	211-2084
1.850	6.178	.3720	30	1G	211-4086	2.020	5.371	.3717	30	2G	211-3339

## VALVE PROGRESSIVE SIZE CHART

Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number	Head Diameter	Overall Length	Stem Diameter	Seat Angle	Stem Type	Part Number
2.020	5.518	.3720	30	2G	211-2491	2.157	6.340	.4350	15	2G	211-2180
2.020	5.518	.3717	30	2G	211-2752	2.190	5.215	.3720	45	1G	211-1974
2.020	5.740	.4350	45	1G	211-1634	2.190	5.230	.3420	45	1G	211-2060
2.025	4.900	.3720	30	1G	211-1982	2.190	5.230	.3420	45	4G	211-2076
2.025	4.900	.3720	30	4G	211-2150	2.220	7.545	.4950	30	SG	211-3343
2.028	7.788	.4365	44	TG	211-3350	2.220	7.550	.4948	30	1G	211-3311
2.031	6.650	.4340	20	1G	211-2626	2.227	8.820	.4960	45	2G	211-3321
2.031	6.732	.4341	30	1G	211-3335	2.245	6.855	.4980	30	1G	211-1330
2.032	5.445	.3720	45	1G	211-1836	2.250	6.869	.4970	30	1G	211-2483
2.041	5.230	.3420	45	4G	211-2082	2.287	9.274	.4960	45	TG	211-2352
2.047	5.946	.3730	30	1G	211-3203	2.348	9.305	.4960	45	TG	211-2351
2.050	5.241	.3420	45	1G	211-2366	2.350	9.390	.4955	29	TG	211-3324
2.054	5.467	.3720	45	1G	211-2337	2.350	9.392	.3717	30	2G	211-3305
2.064	5.147	.3714	45	1G	211-2368	2.375	7.867	.4970	30	1G	211-2112
2.065	5.230	.3720	45	1G	211-1980	2.505	9.390	.3717	30	2G	211-3338
2.072	4.700	.3430	30	1G	211-1952	2.505	9.390	.4960	30	1G	211-3353
2.078	5.250	.3730	30	1G	211-2032	2.557	8.125	.4970	30	2G	211-3352
2.080	4.869	.3730	45	2G	211-1654	2.625	10.198	.5597	45	1G	211-3327
2.082	5.200	.3420	45	1G	211-2156	2.645	8.820	.4970	30	2G	211-3351
2.082	5.290	.3420	45	1G	211-2120	2.750	10.200	.5620	45	1G	211-3354
2.090	5.445	.3710	30	1G	211-2086	2.830	10.883	.5593	30	2G	211-4009
2.094	5.698	.3720	60	2G	211-2455	2.830	10.883	.5595	30	2G	211-4008
2.110	4.980	.3420	30	1G	211-2132	2.831	10.884	.5580	20	2G	211-4013
2.110	5.095	.3420	30	2G	211-2052	3.776	12.625	.8700	30	1G	211-4012
2.157	6.100	.4350	45	1G	211-2611	4.435	12.625	.8700	30	1G	211-4011
2.157	6.340	.4350	15	1G	211-1644						

## VALVE SPRING PRESSURE AND SIZE CHART

Part Number	Free Length	Max. O.D.	Closed Pressure			Open Pressure		
			Comp. To	Min.	Max.	Comp. To	Min.	Max.
212-1002	2.562	1.530	2.156	54	58	1.706	133	141
212-1003	2.344	1.040	1.953	33	37	1.503	83	88
212-1004	2.875	1.344	2.094	40	44	1.781	57	61
212-1007	2.562	2.625	1.922	29	33	1.672	40	44
212-1009	2.312	1.293	1.875	45	51	1.521	102	110
212-1010	2.312	1.296	1.812	37	43	1.437	65	75
212-1011	2.016	1.159	1.750	40	45	1.375	110	120
212-1013	2.500	1.190	2.109	50	56	1.750	116	125
212-1015	2.250	1.078	1.750	25	28	1.406	61	69
212-1018	2.500	.873	2.130	32	36	1.823	62	66
212-1019	2.359	1.135	2.125	52	58	1.796	136	145
212-1021	1.969	1.140	1.656	47	53	1.375	103	110
212-1022	3.469	1.545	2.656	49	53	2.156	105	115
212-1023	2.375	1.292	1.875	58	64	1.521	115	123
212-1024	2.375	1.467	1.906	39	44	1.468	99	108
212-1025	2.062	.968	1.703	47	53	1.421	96	104
212-1026	2.312	.968	1.937	30	33	1.625	63	69
212-1027	2.812	1.031	2.000	42	46	1.750	58	64
212-1029	2.031	.843	1.500	15	17	1.000	30	33
212-1030	2.156	1.333	1.821	62	68	1.505	155	165
212-1032	2.312	1.075	1.546	32	37	1.271	46	50
212-1034	1.750	.871	1.375	18	22	1.125	32	-
212-1036	2.480	.991	2.130	40	44	1.840	81	89
212-1037	2.200	.951	1.890	40	43	1.600	81	85
212-1038	1.970	1.239	1.660	70	77	1.400	148	162
212-1039	2.120	1.332	1.821	54	62	1.505	124	140
212-1041	2.578	1.354	1.978	56	60	1.541	105	113
212-1046	2.281	.977	1.945	28	31	1.396	81	89
212-1050	2.250	1.340	1.858	74	82	1.462	186	198
212-1051	2.030	1.220	1.696	76	84	1.366	155	165
212-1052	2.031	1.382	1.533	55	61	1.203	98	106
212-1053	1.766	.963	1.483	23	29	1.153	54	60
212-1057	2.625	1.097	1.920	48	52	1.520	79	88
212-1059	2.125	1.364	1.780	71	79	1.390	161	177
212-1061	2.250	1.220	1.946	60	65	1.496	155	165
212-1063	1.453	.965	1.611	36	42	1.321	73	83
212-1065	2.108	1.274	1.697	64	70	1.381	124	140
212-1066	2.265	1.271	1.867	71	79	1.477	143	158
212-1067	2.312	1.050	1.731	43	47	1.387	78	86
212-1071	2.000	1.404	1.687	78	88	1.312	170	184
212-1072	1.857	1.175	1.589	40	45	1.214	107	115
212-1073	2.260	1.437	1.820	94	104	1.420	180	197
212-1074	2.260	1.437	1.820	94	104	1.420	180	197
212-1075	3.160	1.131	2.250	66	74	1.765	104	114
212-1077	2.000	1.332	1.626	78	86	1.230	182	198
212-1078	2.109	1.220	1.696	76	89	1.306	184	203
212-1079	1.950	.859	1.800	22	26	1.416	85	89
212-1082	2.010	.920	1.690	23	28	1.250	73	79
212-1083	3.031	1.078	2.531	36	39	2.031	86	95
212-1084	2.160	1.334	1.858	62	68	1.528	158	168
212-1092	2.000	1.319	1.585	48	56	1.222	112	122
212-1094	2.050	1.390	1.800	72	80	1.400	191	203
212-1095	2.093	1.156	1.406	86	92	-	-	-
212-1096	2.625	1.296	2.000	39	45	1.625	62	72
212-1097	2.437	1.261	1.742	121	129	1.592	146	156
212-1098	1.968	1.125	1.656	41	47	1.218	103	110
212-1100	1.880	1.370	1.547	80	90	1.157	178	192
212-1101	2.270	1.364	1.920	76	84	1.495	196	212

## VALVE SPRING PRESSURE AND SIZE CHART

Part Number	Free Length	Max. O.D.	Closed Pressure			Open Pressure		
			Comp. To	Min.	Max.	Comp. To	Min.	Max.
212-1103	2.109	1.220	1.562	24	28	1.212	46	52
212-1104	1.875	.872	1.437	14	17	1.087	32	36
212-1106	2.156	1.449	1.820	74	84	1.420	190	208
212-1110	2.090	.810	1.930	30	34	1.527	100	110
212-1111	2.156	1.250	1.812	30	44	1.375	81	99
212-1112	2.125	1.375	1.812	52	64	1.359	129	157
212-1114	2.125	1.125	1.656	52	57	1.256	103	110
212-1116	2.187	1.304	1.686	53	59	1.332	110	118
212-1117	2.640	1.296	1.937	35	39	1.546	64	72
212-1119	2.070	1.302	1.600	43	49	1.160	97	105
212-1121	1.950	.941	1.816	30	38	1.397	105	115
212-1124	1.765	.857	1.437	21	25	1.125	51	59
212-1125	1.830	1.345	1.585	53	59	1.222	148	158
212-1129	2.050	1.432	1.770	84	94	1.380	225	241
212-1131	2.060	1.490	1.820	80	90	1.320	225	280
212-1134	2.000	1.436	1.670	76	84	1.240	173	194
212-1135	2.030	1.224	1.727	59	69	1.340	158	170
212-1136	1.990	1.400	1.700	76	84	1.300	187	207
212-1139	1.875	1.395	1.580	77	85	1.180	183	202
212-1140	1.760	1.057	1.566	28	34	1.114	99	105
212-1141	1.940	1.397	1.586	59	65	1.134	135	145
212-1142	2.093	1.540	1.880	94	106	1.380	303	327
212-1143	2.110	1.504	1.880	84	96	1.460	210	230
212-1144	2.260	1.332	1.812	95	105	1.437	188	202
212-1145	2.050	1.504	1.800	84	96	1.400	210	230
212-1147	1.937	1.225	1.500	90	100	1.250	165	175
212-1149	2.580	1.390	1.860	121	129	1.430	192	208
212-1150	2.030	1.338	1.700	76	84	1.250	194	206
212-1151	2.200	1.302	1.890	67	77	1.450	170	184
212-1152	2.230	1.364	1.812	85	93	1.387	193	207
212-1153	1.960	1.437	1.670	76	84	1.270	180	194
212-1154	1.900	1.234	1.660	56	64	1.270	180	192
212-1157	2.312	1.140	1.812	52	58	1.437	94	104
212-1163	2.100	1.292	1.727	70	80	1.340	173	187
212-1164	1.940	1.494	1.650	91	101	1.220	231	245
212-1165	2.020	1.374	1.730	56	66	1.280	173	193
212-1167	2.120	1.462	1.820	85	95	1.380	209	231
212-1168	2.030	1.214	1.700	76	84	1.250	194	206
212-1169	2.090	1.540	1.800	94	106	1.380	303	327
212-1170	2.050	1.437	1.770	84	94	1.380	225	241
212-1172	1.760	1.058	1.566	28	34	1.114	99	105
212-1173	1.940	1.398	1.586	59	65	1.134	135	145
212-1174	1.940	1.494	1.650	91	101	1.220	231	245
212-1175	2.290	1.480	1.860	85	95	1.426	210	230
212-1177	2.020	1.462	1.700	74	81	1.280	171	189
212-1180	2.073	1.460	1.790	79	87	1.340	204	226
212-1181	1.970	1.410	1.660	71	79	1.230	171	189
212-1182	2.130	1.390	1.740	80	90	1.330	168	182
212-1183	2.000	1.260	1.700	104	116	1.210	282	306
212-1185	2.030	1.512	1.820	87	96	1.320	299	330
212-1187	2.380	1.450	1.750	100	110	1.250	195	215
212-1190	2.200	1.384	1.812	80	88	1.365	210	226
212-1191	2.120	1.508	1.880	69	81	1.380	228	252
212-1193	1.480	1.117	1.263	47	52	.953	117	127
212-1195	2.050	1.230	1.563	57	65	1.220	120	132
212-1196	2.685	1.245	2.250	66	73	1.724	147	162
212-1197	1.732	1.280	1.520	45	51	1.120	131	145
212-1198	1.910	1.230	1.610	76	84	1.160	194	206

## VALVE SPRING PRESSURE AND SIZE CHART

Part Number	Free Length	Max. O.D.	Closed Pressure			Open Pressure		
			Comp. To	Min.	Max.	Comp. To	Min.	Max.
212-1199	1.910	1.408	1.630	80	88	1.183	210	226
212-1200	2.090	1.107	1.702	36	42	1.237	80	90
212-1201	2.350	1.547	1.752	68	77	1.287	123	136
212-1202	1.853	1.404	1.600	76	84	1.220	190	210
212-1203	2.220	1.211	1.890	67	77	1.450	170	184
212-1206	2.056	1.410	1.820	76	84	1.390	214	237
212-1207	2.440	1.475	1.900	80	100	1.400	175	205
212-1208	1.810	1.404	1.480	80	90	1.080	180	194
212-1209	2.230	1.504	1.860	100	110	1.360	236	256
212-1212	1.910	1.355	1.585	60	68	1.222	138	149
212-1216	1.375	.857	1.187	7	9	.844	21	25
212-1217	1.782	.934	1.500	21	25	1.156	48	52
212-1219	1.510	1.340	1.260	64	72	.886	167	179
212-1221	1.990	1.368	1.786	64	72	1.410	188	202
212-1222	1.968	1.315	1.565	50	60	1.200	95	115
212-1223	1.770	.980	1.380	25	28	.960	53	59
212-1227	1.740	.900	1.480	13	17	1.105	33	39
212-1229	1.800	1.310	1.600	45	55	1.200	155	185
212-1230	1.658	1.250	1.484	54	62	1.134	167	183
212-1232	1.457	.920	1.350	9	13	1.000	46	56
212-1233	1.457	1.245	1.350	25	29	1.050	98	108
212-1236	1.780	.982	1.500	18	22	1.073	63	77
212-1237	1.850	1.340	1.600	31	41	1.100	126	154
212-1238	1.610	1.189	1.450	21	25	1.050	73	89
212-1239	1.390	.820	1.250	11	14	1.050	26	32
212-1241	1.811	1.056	1.570	63	69	1.480	167	183
212-1243	1.890	1.364	1.560	71	79	1.160	159	175
212-1244	2.340	1.474	2.007	65	71	1.552	154	166
212-1245	1.965	1.410	1.800	40	50	1.300	190	220
212-1263	1.875	1.325	1.600	51	63	1.200	140	170
212-1268	1.800	1.295	1.550	40	48	1.150	110	130
212-1281	2.100	1.450	1.800	70	80	1.400	195	220
212-1282	1.985	1.292	1.727	65	75	1.340	168	182
212-1283	2.050	1.236	1.760	56	62	1.360	144	160
212-1288	1.855	1.440	1.715	30	40	1.215	152	168
212-1289	1.855	.998	1.715	125	205	1.215	69	81
212-1290	2.500	1.250	2.200	70	86	1.800	165	200
212-1291	2.050	1.373	1.766	52	64	1.271	151	167
212-1292	2.310	1.486	1.950	51	59	1.470	137	-
212-1293	2.120	1.023	1.894	48	53	-	-	-
212-1294	2.008	1.450	1.669	85	95	1.220	203	217
212-1295	2.280	1.374	1.650	98	108	1.220	168	181
212-1296	1.930	1.482	1.701	64	74	1.280	194	214
212-1297	1.890	1.484	1.600	60	70	1.200	160	185
212-1300	1.909	1.230	1.610	76	84	1.161	194	206
212-1301	1.873	1.385	1.600	71	79	1.150	195	215
212-1302	2.060	1.384	1.780	74	82	1.330	194	214
212-1303	1.750	1.175	1.500	43	53	1.150	112	134
212-1306	1.980	1.252	1.727	73	81	1.340	187	207
212-1307	1.994	1.462	1.660	84	93	1.090	232	250
212-1308	2.414	1.075	2.016	40	48	1.610	105	117
212-1310	2.035	1.268	1.811	75	85	1.390	220	240
212-1311	2.154	1.238	1.992	55	65	1.524	224	240
212-1312	1.923	1.394	1.700	51	59	1.300	153	177
212-1313	2.028	1.420	1.780	76	84	1.330	215	235
212-1314	2.395	1.352	1.650	90	100	1.220	144	156
212-1316	2.010	.968	1.760	52	57	1.130	117	127
212-1317	1.855	1.295	1.455	97	113	1.255	149	165

## VALVE SPRING PRESSURE AND SIZE CHART

Part Number	Free Length	Max. O.D.	Closed Pressure			Open Pressure		
			Comp. To	Min.	Max.	Comp. To	Min.	Max.
212-1318	2.900	1.200	2.300	54	-	1.700	147	-
212-1319	1.975	1.305	1.600	70	80	1.200	153	173
212-1320	2.060	1.383	1.867	36	41	1.287	175	195
212-1321	1.937	1.375	1.755	33	38	1.140	159	176
212-1322	1.907	1.380	1.640	66	74	1.240	167	184
212-1323	1.780	1.374	1.470	60	80	1.070	155	195
212-1324	2.050	1.500	1.800	74	86	1.400	195	215
212-1325	2.132	1.500	1.880	85	95	1.334	283	296
212-1327	1.880	1.242	1.610	76	84	1.167	225	245
212-1329	2.009	1.232	1.680	71	79	1.239	167	179
212-1330	1.780	1.232	1.440	70	80	1.040	160	170
212-1331	2.110	1.290	1.700	86	94	1.291	209	221
212-1332	1.975	1.220	1.620	78	86	1.220	170	180
212-1334	1.960	1.330	1.600	66	74	1.200	168	188
212-1335	2.160	1.392	1.650	108	117	1.220	196	210
212-1336	3.296	1.440	2.589	125	139	2.073	219	242
212-1337	3.100	.983	2.308	56	60	1.783	93	106
212-1338	2.020	1.425	1.660	80	90	1.260	187	203
212-1339	2.059	1.232	1.610	100	110	1.216	228	242
212-1340	1.820	1.152	1.500	61	69	1.100	152	168
212-1342	1.840	1.300	1.577	61	69	1.156	172	188
212-1343	1.720	.960	1.350	35	39	1.100	59	65
212-1344	2.041	1.317	1.450	59	65	1.200	96	106
212-1345	1.820	1.352	1.625	66	74	1.200	205	220
212-1346	1.968	1.312	1.640	81	89	1.216	192	208
212-1348	1.812	.968	1.515	47	53	1.234	96	104
212-1349	1.981	1.249	1.720	76	84	1.315	200	220
212-1350	2.356	1.367	1.900	49	55	1.400	114	126
212-1351	2.070	1.244	1.727	73	81	1.340	157	173
212-1352	1.950	1.424	1.480	76	84	1.070	193	207
212-1354	1.902	1.289	1.460	89	98	1.016	207	224
212-1357	1.840	1.263	1.575	53	58	1.165	129	140
212-1358	1.722	.975	1.180	83	-	1.480	30	-
212-1360	1.923	1.305	1.600	65	-	1.200	161	-
212-1361	2.047	1.316	1.575	62	-	1.260	112	-
212-1362	2.300	1.444	1.900	85	-	1.300	211	-
212-1363	1.959	1.400	1.570	103	-	1.170	228	-
212-1364	1.877	1.332	1.520	71	79	1.120	152	166
212-1365	1.700	1.200	1.437	75	-	1.027	200	-
212-1366	2.030	1.226	1.727	59	73	1.340	158	170
212-1367	2.040	1.384	1.780	74	82	1.360	194	214
212-1369	1.760	1.205	1.500	50	60	1.200	115	135
212-1370	2.010	1.340	1.750	31	38	1.200	110	130
212-1372	1.726	.958	1.500	14	14	1.000	57	57
212-1373	1.924	.940	1.700	51	51	1.350	153	153
212-1374	2.170	1.167	1.585	86	94	1.222	167	179
212-1375	1.941	1.229	1.678	75	-	1.239	220	-
212-1376	1.825	1.207	1.644	29	32	1.344	89	98
212-1380	1.985	1.260	1.750	73	81	1.350	202	222
212-1383	2.200	1.365	1.900	60	72	1.500	145	170
212-1385	2.050	1.390	1.800	72	80	1.400	191	203
212-1386	2.179	1.365	1.790	18	22	1.187	49	54
212-1387	2.574	1.703	2.219	59	72	1.614	167	185
212-1389	3.349	1.785	2.470	161	181	1.908	266	294
212-1390	3.438	2.231	2.968	44	52	2.375	109	127
212-1391	3.094	1.635	2.656	29	35	2.062	75	87
212-1392	2.422	1.635	1.953	50	55	1.310	135	-
212-1393	2.359	1.145	1.922	27	30	1.280	77	-



## VALVE SPRING PRESSURE AND SIZE CHART

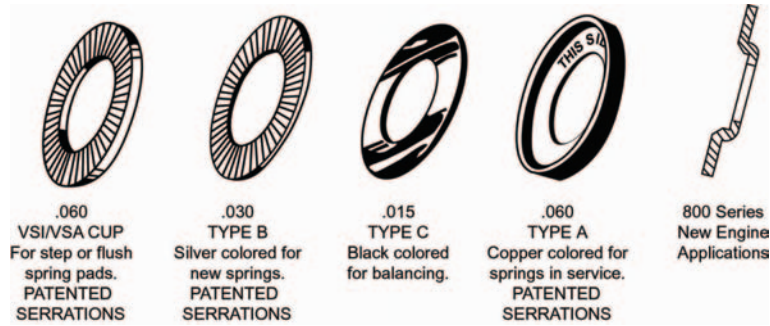
Part Number	Free Length	Max. O.D.	Closed Pressure			Open Pressure		
			Comp. To	Min.	Max.	Comp. To	Min.	Max.
212-1394	1.906	1.588	1.563	42	47	-	-	-
212-1395	1.828	1.125	1.500	15	20	1.000	41	51
212-1396	2.000	1.016	1.488	16	20	1.106	35	44
212-1397	2.578	1.425	1.656	46	51	1.256	80	86
212-1398	2.650	1.272	2.340	53	59	1.287	123	-
212-1399	1.900	1.334	1.503	78	89	1.200	150	165
212-1400	1.656	.992	1.100	102	-	1.500	25	-
212-1401	1.976	1.039	1.570	69	69	1.100	157	157
212-1402	1.940	1.350	1.700	74	-	1.260	230	-
212-1403	1.658	1.183	1.518	20	-	1.108	80	-
212-1404	1.835	1.182	1.471	56	-	1.093	144	-
212-1405	1.917	.922	1.650	45	-	1.300	122	-
212-1406	1.796	1.041	1.496	60	-	1.142	154	-
212-1407	2.025	1.300	1.700	54	-	1.250	158	-
212-1408	1.968	1.043	1.350	35	-	1.700	102	-
212-1409	1.987	1.041	1.800	23	-	1.400	90	-
212-1410	2.277	.877	1.550	69	-	1.850	133	-
212-1411	2.300	.861	1.950	44	-	1.600	93	-
212-1413	1.970	1.162	1.700	40	-	1.350	92	-
212-1414	2.100	1.036	1.700	55	-	1.350	128	-
212-1416	1.855	.962	1.500	45	-	1.200	84	-
212-1417	1.645	.946	1.400	24	-	1.100	61	-
212-1418	1.800	1.155	1.447	43	-	1.024	113	-
212-1419	1.730	1.178	1.447	48	-	1.024	128	-
212-1420	1.720	1.065	1.500	33	-	1.200	88	-
212-1421	1.940	1.148	1.181	144	-	-	-	-
212-1422	1.819	.926	1.366	46	-	1.097	75	-
212-1423	1.658	.994	1.518	21	-	1.108	80	-
212-1424	1.675	.985	1.350	43	-	1.100	80	-
212-1425	1.565	.930	1.400	19	-	1.050	62	-
212-1426	1.670	1.179	1.340	68	-	.985	161	-
212-1427	1.630	1.000	1.340	72	-	.984	175	-
212-1428	1.900	1.180	1.615	77	-	1.180	208	-
212-1429	2.059	1.240	1.700	85	-	1.270	205	-
212-1430	2.080	1.213	1.800	76	-	1.320	220	-
212-1431	1.796	.914	1.366	42	46	1.097	68	74
212-1432	1.781	1.092	1.496	95	-	1.175	210	-
212-1433	2.016	1.300	1.780	85	-	1.330	255	-
212-1434	1.799	1.085	1.496	84	-	1.239	165	-
212-1435	1.905	1.044	1.496	75	-	1.171	136	-
212-1436	1.967	1.312	1.640	85	-	1.216	200	-
212-1437	2.102	.861	1.650	400	-	1.216	921	-
212-1438	1.725	1.184	1.388	60	-	1.034	132	-
212-1439	2.357	1.477	2.007	83	-	1.497	215	-
212-1440	2.580	1.482	1.980	145	-	1.530	262	-
212-1441	2.114	1.410	1.650	129	-	1.350	225	-
212-1446	2.187	1.025	1.750	45	-	1.450	95	-
212-1447	1.560	.885	1.440	12	-	1.030	60	-
212-1448	1.970	1.214	1.820	19	20	1.410	83	86
212-1449	1.930	1.220	1.750	33	-	1.340	130	-
212-1450	1.677	.857	1.500	14	17	1.150	45	50
212-1451	1.850	1.304	1.500	71	79	1.088	174	188
212-1452	2.193	1.312	1.732	95	-	1.264	230	-
212-1453	1.736	.798	1.450	15	-	1.000	55	-
212-1454	1.862	1.170	1.700	27	-	1.300	118	-
212-1455	1.711	.782	1.400	8	-	1.100	18	-
212-1456	1.810	1.110	1.400	22	-	1.000	65	-
212-1457	1.903	1.115	1.450	26	-	1.100	67	-

## VALVE SPRING PRESSURE AND SIZE CHART

Part Number	Free Length	Max. O.D.	Closed Pressure			Open Pressure		
			Comp. To	Min.	Max.	Comp. To	Min.	Max.
212-1458	2.031	1.230	1.580	42	-	1.280	101	-
212-1459	1.958	1.156	1.750	37	-	1.350	131	-
212-1460	2.885	.992	2.368	27	-	1.733	80	-
212-1461	3.285	1.429	2.643	56	-	2.000	165	-
212-1462	2.910	1.153	2.608	103	-	2.165	275	-
212-1463	1.781	1.092	1.492	62	-	-	-	-
212-1464	1.820	1.550	1.492	53	-	-	-	-
212-1465	2.299	.922	1.708	66	-	1.318	175	-
212-1466	2.158	1.035	1.800	39	-	1.400	116	-
212-1467	2.197	1.025	1.750	45	-	1.400	103	-
212-1468	1.676	1.085	1.300	41	-	1.000	84	-
212-1469	1.734	1.090	1.400	27	-	1.100	69	-
212-1470	1.800	1.150	-	-	-	-	-	-
212-1471	1.620	.790	-	-	-	-	-	-
212-1472	1.840	1.108	-	-	-	-	-	-
212-1473	1.540	.790	-	-	-	-	-	-
212-1474	1.600	1.143	-	-	-	-	-	-
212-1475	1.420	.795	-	-	-	-	-	-
212-1476	2.275	.860	-	-	-	-	-	-
212-1477	2.199	.885	-	-	-	-	-	-
212-1478	2.092	.910	-	-	-	-	-	-
212-1479	2.009	.913	1.708	44	-	1.315	119	-
212-1480	2.136	1.300	-	-	-	-	-	-
212-1481	2.080	1.035	-	-	-	-	-	-
212-1482	1.798	1.000	1.580	40	-	1.280	107	-
212-1483	1.960	1.029	1.800	46	54	1.318	199	229
212-1485	2.012	.982	1.590	73	-	-	-	-
212-1486	1.984	.984	1.740	60	-	-	-	-
212-1488	1.950	1.349	1.732	73	-	1.350	223	-
212-1489	1.700	1.185	1.400	68	-	1.150	138	-
212-1492	2.187	.890	1.750	32	-	1.300	79	-
212-1493	2.074	.896	1.700	35	-	1.300	101	-
212-1494	1.882	1.065	1.650	23	-	1.300	61	-
212-1495	2.157	1.178	1.750	53	-	1.400	119	-
212-1500	1.700	1.197	1.585	25	-	1.430	66	-
212-1504	1.902	.955	1.468	81	-	1.226	152	-
212-1505	1.649	1.044	1.378	50	-	1.000	136	-
212-1507	1.994	1.316	1.640	89	-	1.212	200	-
212-1508	1.804	.886	1.475	25	-	1.175	63	-
212-1510	2.327	1.299	1.600	72	-	1.250	140	-
212-1511	1.850	1.050	1.600	43	48	1.300	120	131
212-1512	1.831	1.050	1.600	46	-	1.300	132	-
212-1513	1.918	1.091	1.509	40	-	.984	100	-
212-1514	1.978	1.520	1.709	65	-	1.184	200	-
212-1517	1.673	1.106	1.427	45	-	.934	151	-
212-1521	1.683	1.149	1.378	70	-	.394	190	-
212-1522	1.742	1.126	1.338	80	-	.393	195	-

# VALVE SPRING INSERTS PROGRESSIVE SIZE CHART

(Includes Domestic, Import, Light and Heavy Duty Truck, Agricultural, Industrial, Marine and Performance)  
(Indexed by Outside Diameter)



O.D.	I.D.	Part Number	Description	O.D.	I.D.	Part Number	Description
.915	.640	A-202	Type A .060	1.360	1.000	C-102HP	Type CHP .015
.915	.640	B-202	Type B .030	1.375	.765	A-301	Type A .060
1.000	.688	A-101	Type A .060	1.375	.765	B-301	Type B .030
1.000	.688	B-101	Type B .030	1.375	.765	A-301HP	Type AHP .060
1.000	.765	A-104	Type A .060	1.375	.765	B-301HP	Type BHP .030
1.000	.765	B-104	Type B .030	1.375	.765	C-301HP	Type CHP .015
1.000	.719	A-106	Type A .060	1.375	.781	A-403	Type A .060
1.000	.719	B-106	Type B .030	1.375	.645	A-306	Type A .060
1.125	.719	A-300	Type A .060	1.375	.645	B-306	Type B .030
1.156	.828	A-407	Type A .060	1.437	.645	A-306HP	Type AHP .060
1.218	.875	A-105	Type A .060	1.437	.645	B-306HP	Type BHP .030
1.218	.875	B-105	Type B .030	1.437	.645	C-306HP	Type CHP .015
1.250	.812	A-203	Type A .060	1.437	.765	A-305	Type A .060
1.250	.812	B-203	Type B .030	1.437	.765	B-305	Type B .030
1.250	.812	A-203HP	Type AHP .060	1.437	.765	A-305HP	Type AHP .060
1.250	.812	B-203HP	Type BHP .030	1.437	.765	B-305HP	Type BHP .030
1.250	.812	C-203HP	Type CHP .015	1.437	.765	C-305HP	Type CHP .015
1.250	.875	A-201	Type A .060	1.480	.703	A-303	Type A .060
1.250	.875	B-201	Type B .030	1.480	.703	B-303	Type B .030
1.250	.875	A-201HP	Type AHP .060	1.480	.703	A-303HP	Type AHP .060
1.250	.875	B-201HP	Type BHP .030	1.480	.703	B-303HP	Type BHP .030
1.312	.954	A-100	Type A .060	1.480	.703	C-303HP	Type CHP .015
1.312	.954	B-100	Type B .030	1.500	.875	A-404	Type A .060
1.360	.640	A-200	Type A .060	1.500	.875	B-404	Type B .030
1.360	.640	B-200	Type B .030	1.500	1.031	A-103	Type A .060
1.360	.640	A-200HP	Type AHP .060	1.500	1.031	B-103	Type B .030
1.360	.640	B-200HP	Type BHP .030	1.500	1.031	A-103HP	Type AHP .060
1.360	1.000	A-502	Type A .060	1.500	1.031	B-103HP	Type BHP .030
1.360	1.000	A-102	Type A .060	1.500	1.031	C-103HP	Type CHP .015
1.360	1.000	B-102	Type B .030	1.500	1.031	A-503	Type A .060
1.360	1.000	A-102HP	Type AHP .060	1.671	.820	A-401	Type A .060
1.360	1.000	B-102HP	Type BHP .030	1.750	.820	A-400	Type A .060

## PUSHROD NUMERICAL SPECIFICATIONS

Part Number	Overall Length	Part Number	Overall Length	Part Number	Overall Length	Part Number	Overall Length
215-4002	8.723	215-4110	9.670	215-4200	8.045	215-4289	7.846
215-4003	8.030	215-4111	7.500	215-4201	7.718	215-4290	7.796
215-4006	9.570	215-4113	8.575	215-4202	9.700	215-4291	7.896
215-4008	8.778	215-4114	9.515	215-4203	7.190	215-4294	7.523
215-4009	10.470	215-4115	10.265	215-4204	6.163	215-4297	8.130
215-4010	11.270	215-4116	9.315	215-4205	10.009	215-4298	8.310
215-4011	10.605	215-4118	8.280	215-4206	9.000	215-4299	6.420
215-4012	7.818	215-4119	9.250	215-4207	9.954	215-4300	9.420
215-4013	9.680	215-4121	6.775	215-4208	8.556	215-4301	7.310
215-4029	8.563	215-4122	9.325	215-4209	17.700	215-4302	6.130
215-4030	8.509	215-4123	8.695	215-4215	11.270	215-4303	7.420
215-4034	8.635	215-4125	9.180	215-4216	8.735	215-4304	8.598
215-4036	9.375	215-4126	9.136	215-4217	8.902	215-4305	9.568
215-4037	8.370	215-4127	9.130	215-4218	7.730	215-4306	5.770
215-4038	9.980	215-4128	9.130	215-4229	10.672	215-4307	6.098
215-4041	8.270	215-4131	8.567	215-4231	8.225	215-4308	5.475
215-4043	9.325	215-4132	7.605	215-4232	8.495	215-4312	9.252
215-4045	11.435	215-4133	8.152	215-4233	7.284	215-4313	9.652
215-4046	9.770	215-4134	6.876	215-4234	8.399	215-4314	7.342
215-4047	9.600	215-4135	8.410	215-4235	6.250	215-4315	6.886
215-4048	8.122	215-4137	8.648	215-4236	9.520	215-4316	8.150
215-4049	9.620	215-4139	9.545	215-4237	6.764	215-4317	9.618
215-4050	8.012	215-4140	9.330	215-4238	8.656	215-4318	7.775
215-4051	6.804	215-4141	7.796	215-4239	9.624	215-4319	8.616
215-4052	7.805	215-4142	11.076	215-4240	11.406	215-4320	10.080
215-4053	9.280	215-4145	7.875	215-4241	6.066	215-4321	7.882
215-4062	8.770	215-4146	8.250	215-4242	6.413	215-4322	9.728
215-4065	8.699	215-4150	8.290	215-4243	8.300	215-4323	5.125
215-4070	11.710	215-4151	8.905	215-4244	7.216	215-4324	6.721
215-4075	9.155	215-4152	9.378	215-4245	5.960	215-4325	7.135
215-4078	8.690	215-4153	9.656	215-4246	7.725	215-4326	7.125
215-4079	8.615	215-4154	9.500	215-4247	9.244	215-4327	6.910
215-4080	9.130	215-4155	9.515	215-4248	8.249	215-4328	5.307
215-4081	11.380	215-4156	8.715	215-4249	7.942	215-4329	7.775
215-4085	8.350	215-4157	8.910	215-4250	6.804	215-4330	5.333
215-4086	8.280	215-4158	9.749	215-4252	9.650	215-4331	5.295
215-4087	9.250	215-4160	9.560	215-4253	6.802	215-4332	7.457
215-4088	10.140	215-4161	8.550	215-4270	8.179	215-4333	7.518
215-4089	7.490	215-4162	9.390	215-4271	9.166	215-4334	7.000
215-4090	8.278	215-4169	8.408	215-4272	8.600	215-4335	7.397
215-4092	9.425	215-4170	9.590	215-4273	9.641	215-4337	8.591
215-4093	9.595	215-4184	8.120	215-4274	7.965	215-4338	7.640
215-4096	9.414	215-4185	9.650	215-4275	7.996	215-4339	7.640
215-4097	9.645	215-4186	7.265	215-4276	7.946	215-4340	8.592
215-4098	8.680	215-4187	5.429	215-4277	7.896	215-4341	9.145
215-4100	9.355	215-4188	6.574	215-4278	7.796	215-4342	8.185
215-4103	9.100	215-4193	8.182	215-4280	8.380	215-4343	10.234
215-4106	10.200	215-4196	8.906	215-4281	8.280	215-4344	7.114
215-4107	7.735	215-4197	12.508	215-4284	9.250	215-4345	7.523
215-4108	8.240	215-4198	10.326	215-4285	7.746		
215-4109	9.557	215-4199	8.268	215-4288	7.794		

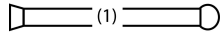
## PUSH RODS PROGRESSIVE SPECIFICATIONS

Overall Length	Type	Outside Diameter	Part Number	Overall Length	Type	Outside Diameter	Part Number
5.125	5	.313	215-4323	8.012	1	.313	215-4050
5.295	5	.312	215-4331	8.030	6	.313	215-4003
5.307	5	.312	215-4328	8.045	5	.313	215-4200
5.333	5	.312	215-4330	8.120	5	.313	215-4184
5.429	1	.313	215-4187	8.122	1	.313	215-4048
5.475	6	.312	215-4308	8.130	3	.437	215-4297
5.770	5	.312	215-4306	8.150	9	.313	215-4316
5.960	5	.312	215-4245	8.152	5	.313	215-4133
6.066	5	.312	215-4241	8.179	5	.312	215-4270
6.098	5	.312	215-4307	8.182	9	.313	215-4193
6.130	6	.375	215-4302	8.185	5	.375	215-4342
6.163	5	.312	215-4204	8.225	5	.340	215-4231
6.250	5	.314	215-4235	8.240	8	.313	215-4108
6.413	5	.312	215-4242	8.249	5	.312	215-4248
6.420	3	.312	215-4299	8.250	8	.830	215-4146
6.574	1	.369	215-4188	8.268	5	.312	215-4199
6.721	5	.344	215-4324	8.270	2	.313	215-4041
6.764	6	.312	215-4237	8.278	9	.313	215-4090
6.775	9	.313	215-4121	8.280	5	.375	215-4086
6.802	6	.312	215-4253	8.280	5	.375	215-4281
6.804	5	.312	215-4250	8.280	9	.375	215-4118
6.804	5	.313	215-4051	8.290	2	.375	215-4150
6.876	5	.313	215-4134	8.300	5	.312	215-4243
6.886	9	.313	215-4315	8.310	6	.375	215-4298
6.910	5	.312	215-4327	8.350	6	.313	215-4085
7.000	5	.343	215-4334	8.370	1	.313	215-4037
7.114	5	.312	215-4344	8.380	3	.375	215-4280
7.125	9	.315	215-4326	8.399	5	.315	215-4234
7.135	5	.312	215-4325	8.408	5	.313	215-4169
7.190	5	.312	215-4203	8.410	9	.313	215-4135
7.216	5	.312	215-4244	8.495	9	.315	215-4232
7.265	9	.313	215-4186	8.509	7	.313	215-4030
7.284	5	.315	215-4233	8.550	5	.313	215-4161
7.310	6	.375	215-4301	8.556	9	.312	215-4208
7.342	2	.313	215-4314	8.563	1	.313	215-4029
7.397	5	.312	215-4335	8.567	2	.375	215-4131
7.420	6	.312	215-4303	8.575	6	.313	215-4113
7.457	5	.375	215-4332	8.591	5	.375	215-4337
7.490	1	.313	215-4089	8.592	5	.312	215-4340
7.500	6	.313	215-4111	8.598	9	.312	215-4304
7.518	5	.375	215-4333	8.600	5	.312	215-4272
7.523	5	.312	215-4294	8.615	6	.313	215-4079
7.523	5	.312	215-4345	8.616	5	.313	215-4319
7.605	9	.313	215-4132	8.635	3	.313	215-4034
7.640	5	.312	215-4339	8.648	5	.313	215-4137
7.640	5	.375	215-4338	8.656	5	.312	215-4238
7.718	5	.313	215-4201	8.680	9	.375	215-4098
7.725	5	.375	215-4246	8.690	5	.313	215-4078
7.730	5	.313	215-4218	8.695	9	.313	215-4123
7.735	5	.313	215-4107	8.699	6	.313	215-4065
7.746	9	.312	215-4285	8.715	2	.375	215-4156
7.775	5	.312	215-4329	8.723	6	.313	215-4002
7.775	9	.312	215-4318	8.735	5	.377	215-4216
7.794	5	.375	215-4288	8.770	2	.313	215-4062
7.796	5	.312	215-4278	8.778	9	.313	215-4008
7.796	5	.312	215-4290	8.902	5	.312	215-4217
7.796	5	.313	215-4141	8.905	2	.375	215-4151
7.805	1	.313	215-4052	8.906	9	.313	215-4196
7.818	5	.313	215-4012	8.910	4	.375	215-4157
7.846	3	.312	215-4289	9.000	5	.312	215-4206
7.875	8	.824	215-4145	9.100	5	.344	215-4103
7.882	9	.312	215-4321	9.130	8	.313	215-4080
7.896	5	.312	215-4277	9.130	9	.313	215-4127
7.896	5	.312	215-4291	9.130	9	.344	215-4128
7.942	5	.312	215-4249	9.136	5	.313	215-4126
7.946	5	.312	215-4276	9.145	5	.375	215-4341
7.965	5	.344	215-4274	9.155	3	.375	215-4075
7.996	5	.312	215-4275	9.166	5	.312	215-4271

## PUSH RODS PROGRESSIVE SPECIFICATIONS

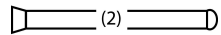
Overall Length	Type	Outside Diameter	Part Number	Overall Length	Type	Outside Diameter	Part Number
9.180	2	.375	215-4125	9.641	5	.312	215-4273
9.244	5	.312	215-4247	9.645	9	.375	215-4097
9.250	5	.375	215-4284	9.650	5	.313	215-4185
9.250	9	.375	215-4087	9.650	9	.312	215-4252
9.250	9	.375	215-4119	9.652	5	.312	215-4313
9.252	5	.313	215-4312	9.656	6	.313	215-4153
9.280	6	.313	215-4053	9.670	6	.313	215-4110
9.315	6	.313	215-4116	9.680	5	.313	215-4013
9.325	1	.344	215-4122	9.700	5	.312	215-4202
9.325	2	.344	215-4043	9.728	5	.313	215-4322
9.330	6	.313	215-4140	9.749	4	.375	215-4158
9.355	6	.313	215-4100	9.770	6	.313	215-4046
9.375	3	.313	215-4036	9.954	5	.344	215-4207
9.378	5	.313	215-4152	9.980	1	.313	215-4038
9.390	6	.313	215-4162	10.009	5	.312	215-4205
9.414	6	.313	215-4096	10.080	5	.313	215-4320
9.420	9	.312	215-4300	10.140	5	.313	215-4088
9.425	5	.313	215-4092	10.200	5	.344	215-4106
9.500	5	.313	215-4154	10.234	5	.343	215-4343
9.515	2	.375	215-4155	10.265	6	.313	215-4115
9.515	6	.313	215-4114	10.326	5	.346	215-4198
9.520	5	.315	215-4236	10.470	1	.313	215-4009
9.545	9	.313	215-4139	10.605	1	.313	215-4011
9.557	5	.313	215-4109	10.672	5	.375	215-4229
9.560	6	.313	215-4160	11.076	9	.344	215-4142
9.568	9	.312	215-4305	11.270	1	.313	215-4010
9.570	8	.313	215-4006	11.270	2	.375	215-4215
9.590	6	.313	215-4170	11.380	5	.313	215-4081
9.595	5	.313	215-4093	11.406	5	.312	215-4240
9.600	1	.313	215-4047	11.435	2	.375	215-4045
9.618	6	.313	215-4317	11.710	2	.375	215-4070
9.620	6	.313	215-4049	12.508	4	.355	215-4197
9.624	5	.312	215-4239	17.700	1	.685	215-4209

# Push Rods



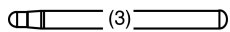
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Overall Length	Part Number
5.429	215-4187
6.574	215-4188
8.012	215-4050
8.122	215-4048
8.370	215-4037
8.563	215-4029
9.325	215-4122
9.448	215-4350
9.600	215-4047
9.980	215-4038
11.060	215-4346
11.435	215-4348
17.700	215-4209



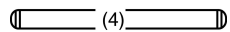
**SOLID**

Overall Length	Part Number
7.342	215-4314
8.270	215-4041
8.290	215-4150
8.770	215-4062
8.905	215-4151
9.325	215-4043
9.515	215-4155
11.270	215-4215
11.435	215-4045
11.710	215-4070



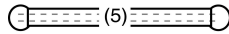
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Overall Length	Part Number
6.420	215-4299
8.130	215-4297
8.635	215-4034
9.155	215-4075
9.375	215-4036



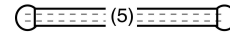
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Overall Length	Part Number
8.910	215-4157
9.749	215-4158
12.508	215-4197



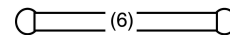
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Overall Length	Part Number
5.125	215-4323
5.295	215-4331
5.307	215-4328
5.333	215-4330
5.770	215-4306
5.960	215-4245
6.066	215-4241
6.098	215-4307
6.163	215-4204
6.250	215-4235
6.413	215-4242
6.634	215-4351
6.721	215-4324
6.804	215-4051
6.804	215-4250
6.876	215-4134
6.904	215-4347
6.910	215-4327
7.000	215-4334
7.114	215-4344
7.135	215-4325
7.190	215-4203
7.216	215-4244
7.284	215-4233
7.397	215-4335
7.457	215-4332
7.518	215-4333
7.523	215-4294
7.523	215-4345
7.640	215-4338
7.640	215-4339
7.660	215-4349
7.718	215-4201
7.725	215-4246
7.730	215-4218
7.735	215-4107
7.775	215-4329
7.796	215-4141
7.796	215-4278
7.818	215-4012
7.864	215-4352
7.942	215-4249
7.965	215-4274
8.045	215-4200
8.120	215-4184
8.152	215-4133
8.179	215-4270
8.185	215-4342
8.225	215-4231
8.249	215-4248
8.268	215-4199
8.280	215-4086
8.300	215-4243
8.399	215-4234
8.408	215-4169
8.550	215-4161
8.591	215-4337
8.592	215-4340
8.600	215-4272



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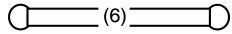
Overall Length	Part Number
8.616	215-4319
8.648	215-4137
8.656	215-4238
8.690	215-4078
8.735	215-4216
8.902	215-4217
9.000	215-4206
9.100	215-4103
9.136	215-4126
9.145	215-4341
9.166	215-4271
9.244	215-4247
9.252	215-4312
9.378	215-4152
9.425	215-4092
9.500	215-4154
9.520	215-4236
9.557	215-4109
9.595	215-4093
9.624	215-4239
9.641	215-4273
9.650	215-4185
9.652	215-4313
9.680	215-4013
9.700	215-4202
9.728	215-4322
9.954	215-4207
10.009	215-4205
10.080	215-4320
10.140	215-4088
10.200	215-4106
10.234	215-4343
10.326	215-4198
10.672	215-4229
11.380	215-4081
11.406	215-4240



**SOLID**

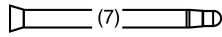
Overall Length	Part Number
5.475	215-4308
6.130	215-4302
6.764	215-4237
6.802	215-4253
7.310	215-4301
7.420	215-4303
7.500	215-4111
8.030	215-4003
8.310	215-4298
8.350	215-4085
8.575	215-4113
8.615	215-4079
8.699	215-4065
8.723	215-4002
9.315	215-4116

# Push Rods



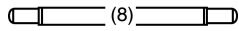
**SOLID (Continued)**

Overall Length	Part Number
9.330	215-4140
9.355	215-4100
9.390	215-4162
9.414	215-4096
9.515	215-4114
9.560	215-4160
9.590	215-4170
9.618	215-4317
9.620	215-4049
9.656	215-4153
9.670	215-4110
9.770	215-4046
10.265	215-4115



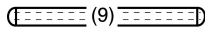
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Overall Length	Part Number
8.509	215-4030



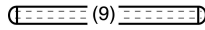
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Overall Length	Part Number
7.875	215-4145
8.240	215-4108
8.250	215-4146
9.130	215-4080
9.570	215-4006



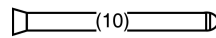
**DRILLED**

Overall Length	Part Number
6.775	215-4121
6.886	215-4315
7.125	215-4326
7.605	215-4132
7.775	215-4318
7.882	215-4321
8.150	215-4316
8.182	215-4193
8.278	215-4090
8.410	215-4135
8.495	215-4232
8.556	215-4208
8.598	215-4304
8.680	215-4098
8.695	215-4123
8.778	215-4008
8.906	215-4196



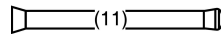
**DRILLED (Continued)**

Overall Length	Part Number
9.130	215-4127
9.130	215-4128
9.250	215-4087
9.420	215-4300
9.545	215-4139
9.568	215-4305
9.645	215-4097
9.650	215-4252
11.076	215-4142



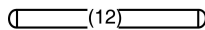
**SOLID**

Overall Length	Part Number
7.265	215-4186
7.490	215-4089
8.567	215-4131
9.180	215-4125



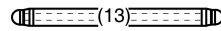
**SOLID**

Overall Length	Part Number
7.805	215-4052
8.715	215-4156
10.470	215-4009
10.605	215-4011
11.270	215-4010



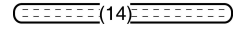
**SOLID**

Overall Length	Part Number
9.280	215-4053



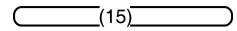
**DRILLED**

Overall Length	Part Number
8.280	215-4118
9.250	215-4119



**DRILLED**

Overall Length	Part Number
7.266	215-4353
7.696	215-4286
7.746	215-4285
7.796	215-4290
7.846	215-4289
7.896	215-4277
7.896	215-4291
7.946	215-4276
7.996	215-4275
8.280	215-4281
8.780	215-4293
9.250	215-4284
9.350	215-4283
9.650	215-4282
9.750	215-4292



**SOLID**

Overall Length	Part Number
7.794	215-4288
7.900	215-4287
8.380	215-4280
8.680	215-4279



## VALVE GUIDE NUMERICAL SPECIFICATIONS

Part Number	Inside Diameter	Part Number	Inside Diameter	Part Number	Inside Diameter	Part Number	Inside Diameter
217-3150	.3120	217-3260	.3740	217-3426	.3450	217-3830	.4050
217-3151	.3430	217-3262	.2610	217-3427	.3150	217-3832	.3130
217-3152	.3730	217-3263	.2610	217-3428	.3160	217-3833	.3440
217-3164	.3430	217-3264	.3140	217-3429	.3160	217-3836	.3770
217-3165	.3430	217-3264.002	.3140	217-3434	.3740	217-3839	.4390
217-3166	.3430	217-3265	.3140	217-3435	.3160	217-3840	.3750
217-3167	.3430	217-3265.002	.3140	217-3437	.3744	217-3851	.3140
217-3170	.3740	217-3266	.3740	217-3438	.3750	217-3852	.3130
217-3172	.3430	217-3267	.3740	217-3439	.3770	217-3853	.3750
217-3173	.3740	217-3268	.3740	217-3444	.3720	217-3854	.3450
217-3174	.4370	217-3269	.3740	217-3445	.3752	217-3858	.3750
217-3175	.3730	217-3270	.3750	217-3446	.4977	217-3859	.3750
217-3176	.4370	217-3271	.3750	217-3447	.3157	217-3860	.3440
217-3177	.4380	217-3272	.3760	217-3449	.3161	217-3865	.4050
217-3178	.3120	217-3273	.3730	217-3450	.3740	217-3872	.3430
217-3180	.3740	217-3275	.3180	217-3451	.2370	217-3873	.3430
217-3181	.3430	217-3276	.3430	217-3452	.3150	217-3874	.3440
217-3182	.3750	217-3283	.4410	217-3453	.3150	217-3875	.3440
217-3183	.4370	217-3284	.3870	217-3454	.3150	217-3881	.3750
217-3184	.3740	217-3286	.3750	217-3458	.3140	217-3891	.3440
217-3185	.3740	217-3288	.3420	217-3503	.3130	217-3896	.3440
217-3187	.3440	217-3289	.3810	217-3504	.3750	217-3897	.3750
217-3189	.3740	217-3291	.3740	217-3515	.3430	217-3898	.3750
217-3190	.3740	217-3301	.3180	217-3527	.3440	217-3900	.3430
217-3191	.3740	217-3302	.3150	217-3533	.4060	217-3907	.3140
217-3192	.3430	217-3303	.3150	217-3544	.3430	217-3908	.3130
217-3193	.3430	217-3304	.3730	217-3545	.3440	217-3914	.4370
217-3195	.3140	217-3305	.3420	217-3546	.3750	217-3916	.4530
217-3196	.3150	217-3306	.3750	217-3547	.3750	217-3918	.3440
217-3197	.3180	217-3307	.3740	217-3568	.3120	217-3937	.3750
217-3199	.2770	217-3308	.3150	217-3577	.3120	217-3943	.3450
217-3200	.2770	217-3310	.4390	217-3579	.3750	217-3944	.3450
217-3201	.2600	217-3311	.4390	217-3600	.4390	217-3946	.3130
217-3207	.2600	217-3313	.2760	217-3606	.4050	217-3951	.4380
217-3208	.3160	217-3314	.3150	217-3613	.3440	217-3967	.4380
217-3209	.3150	217-3315	.2760	217-3614	.3440	217-3970	.3140
217-3210	.4530	217-3316	.3350	217-3618	.3750	217-3972	.3160
217-3211	.4190	217-3318	.3160	217-3619	.3160	217-3973	.5000
217-3214	.3160	217-3319	.3160	217-3620	.3430	217-3974	.3450
217-3225	.3150	217-3320	.2760	217-3636	.3130	217-3976	.3150
217-3226	.3440	217-3321	.2760	217-3644	.5000	217-3977	.3740
217-3227	.3120	217-3322	.3160	217-3673	.3430	217-3978	.3740
217-3228	.3740	217-3325	.3750	217-3678	.3160	217-3979	.3440
217-3229	.3440	217-3326	.2370	217-3680	.3450	217-3980	.3440
217-3230	.3440	217-3327	.3150	217-3693	.3750	217-3981	.3740
217-3231	.3440	217-3328	.2760	217-3695	.4390	217-3982	.3740
217-3232	.3430	217-3329	.2760	217-3696	.4390	217-3983	.3160
217-3234	.3740	217-3330	.2760	217-3697	.3120	217-3987	.3160
217-3235	.3740	217-3331	.2770	217-3701	.4370	217-3990	.3160
217-3236	.3750	217-3332	.3820	217-3703	.3130	217-3992	.3160
217-3238	.3440	217-3333	.3740	217-3704	.3750	217-4000	.2760
217-3239	.4370	217-3334	.3730	217-3711	.4400	217-4001	.2760
217-3240	.3430	217-3335	.3160	217-3717	.3170	217-4002	.2360
217-3241	.4370	217-3336	.3160	217-3726	.3440	217-4003	.2600
217-3242	.4370	217-3337	.3450	217-3727	.4050	217-4004	.3160
217-3243	.3430	217-3338	.3430	217-3732	.3430	217-4005.002	.3430
217-3244	.3730	217-3342	.3750	217-3733	.3750	217-4006	.2770
217-3245	.3750	217-3378	.3170	217-3745	.3450	217-4007	.2510
217-3249	.3440	217-3379	.3440	217-3747	.3760	217-4008	.3150
217-3250	.3120	217-3380	.2760	217-3758	.3430	217-4009	.2170
217-3251	.5020	217-3402	.3160	217-3804	.3440	217-4010	.2170
217-3252	.3740	217-3406	.3160	217-3810	.5000	217-4011	.2750
217-3253	.3740	217-3407	.3150	217-3813	.4380	217-4012	.2370
217-3254	.3430	217-3411	.3150	217-3814	.4380	217-4013	.2370
217-3255	.3430	217-3412	.3150	217-3816	.4390	217-4014	.3180
217-3257	.3140	217-3413	.3540	217-3817	.4390	217-4015	.2760
217-3258	.3750	217-3421	.3750	217-3819	.3440	217-4016	.2360
217-3259	.3750	217-3425	.3170	217-3829	.4050	217-4016.002	.2360

## VALVE GUIDE NUMERICAL SPECIFICATIONS

Part Number	Inside Diameter	Part Number	Inside Diameter	Part Number	Inside Diameter	Part Number	Inside Diameter
217-4017	.2360	217-4041	.3740	217-4069	.3745	217-4090	.3740
217-4017.002	.2360	217-4042	.3440	217-4070	.3745	217-4091	.3750
217-4018	.3160	217-4044	.3730	217-4071	.3750	217-4093	.2600
217-4019	.2807	217-4045	.5005	217-4072	.4375	217-4094	.3440
217-4020	.2807	217-4046	.4995	217-4073	.4977	217-4095	.3740
217-4022	.3175	217-4047	.4385	217-4074	.5005	217-4096	.3750
217-4026	.3740	217-4048	.5005	217-4075	.3763	217-4097	.3730
217-4027	.3150	217-4049	.5005	217-4076	.3453	217-4098	.3740
217-4028	.3175	217-4051	.4385	217-4077	.3745	217-4099	.3730
217-4029	.2610	217-4053	.3771	217-4079	.2388	217-4100	.3440
217-4030	.2370	217-4055	.5020	217-4080	.2765	217-4101	.3730
217-4032	.2371	217-4056	.5005	217-4081	.2765	217-4103	.3735
217-4033	.2760	217-4057	.3730	217-4082	.3819	217-4104	.2360
217-4034	.3155	217-4058	.3747	217-4083	.3740	217-4105	.2355
217-4035	.2605	217-4060	.6845	217-4084	.3430	217-4106	.2355
217-4036	.2605	217-4061	.4385	217-4085	.3430	217-4107	.2354
217-4037	.2170	217-4062	.4995	217-4086	.3440	217-4108	.2353
217-4038	.2170	217-4063	.3750	217-4087	.3420		
217-4039	.2765	217-4064	.8745	217-4088	.3430		
217-4040	.2603	217-4065	.4050	217-4089	.3430		

## VALVE GUIDE PROGRESSIVE SIZE CHART

Types: 1-Grooved    2-Stepped    3-Plain    4-Undercut    5-Flanged    6-Shoulder

Inside Diameter	Outside Diameter	Overall Length	Type	Part Number	Inside Diameter	Outside Diameter	Overall Length	Type	Part Number
.2170	.3760	1.575	1	217-4038	.3140	.4390	1.813	3	217-3907
.2170	.4360	1.875	1	217-4009	.3140	.4740	1.910	1	217-3195
.2170	.4360	2.130	1	217-4010	.3140	.4760	2.630	5	217-3970
.2170	.4365	1.260	1	217-4037	.3140	.4930	1.575	1	217-3264
.2353	.4350	1.653	1	217-4108	.3140	.4930	1.693	1	217-3265
.2354	.4350	1.653	1	217-4107	.3140	.4950	1.575	1	217-3264.002
.2355	.4355	1.730	3	217-4106	.3140	.4950	1.693	1	217-3265.002
.2355	.4355	1.850	3	217-4105	.3140	.5020	2.500	3	217-3458
.2360	.3950	1.690	1	217-4016	.3140	.5640	2.250	2	217-3851
.2360	.3950	1.690	1	217-4017	.3140	.5660	3.031	3	217-3257
.2360	.3950	1.970	1	217-4002	.3150	.4390	2.200	3	217-4008
.2360	.3970	1.690	1	217-4016.002	.3150	.4720	1.690	1	217-3327
.2360	.3970	1.690	1	217-4017.002	.3150	.4740	2.360	4	217-3308
.2360	.4350	1.618	3	217-4104	.3150	.4745	2.165	1	217-3196
.2370	.4350	1.595	1	217-3326	.3150	.4760	1.440	5	217-3407
.2370	.4350	1.920	1	217-4012	.3150	.4760	2.500	1	217-3314
.2370	.4350	1.920	1	217-4013	.3150	.4780	2.400	5	217-3411
.2370	.4360	1.520	1	217-3451	.3150	.4930	2.275	1	217-3452
.2370	.4360	1.600	1	217-4030	.3150	.5020	1.575	1	217-3303
.2371	.4355	1.775	1	217-4032	.3150	.5020	1.693	1	217-3302
.2388	.4736	1.421	1	217-4079	.3150	.5020	2.250	3	217-3427
.2510	.5000	2.360	2	217-4007	.3150	.5020	2.438	3	217-3976
.2600	.4190	2.085	1	217-4003	.3150	.5140	2.400	5	217-3412
.2600	.4755	1.990	1	217-4093	.3150	.5145	1.890	1	217-4027
.2600	.4760	1.960	5	217-3201	.3150	.5160	1.850	5	217-3209
.2600	.4760	2.159	5	217-3207	.3150	.5160	2.046	1	217-3454
.2603	.4750	1.799	1	217-4040	.3150	.5165	1.890	1	217-3453
.2605	.4765	1.770	1	217-4035	.3150	.5520	2.165	3	217-3225
.2605	.4765	1.975	1	217-4036	.3155	.4745	2.205	1	217-4034
.2610	.4760	1.730	1	217-3262	.3157	.5930	2.260	1	217-3447
.2610	.4760	1.950	1	217-3263	.3160	.4740	1.930	1	217-3406
.2610	.4760	1.970	1	217-4029	.3160	.4740	2.320	1	217-3402
.2750	.4740	1.990	4	217-4011	.3160	.4740	2.660	1	217-4004
.2760	.4350	2.070	1	217-4033	.3160	.4760	2.400	5	217-3972
.2760	.4360	1.770	2	217-3315	.3160	.5020	2.000	3	217-3428
.2760	.4360	2.310	2	217-3313	.3160	.5120	1.566	3	217-3429
.2760	.4550	1.695	1	217-3328	.3160	.5140	1.823	1	217-4018
.2760	.4550	1.970	1	217-3329	.3160	.5140	2.130	1	217-3992
.2760	.4570	1.700	5	217-3320	.3160	.5140	2.260	5	217-3983
.2760	.4570	1.930	5	217-3321	.3160	.5150	1.870	5	217-3322
.2760	.4740	2.167	1	217-4000	.3160	.5160	1.730	5	217-3214
.2760	.4740	2.280	1	217-4001	.3160	.5160	1.970	5	217-3319
.2760	.4750	2.360	4	217-4015	.3160	.5160	2.050	1	217-3318
.2760	.4760	1.895	1	217-3330	.3160	.5160	2.050	5	217-3208
.2760	.4760	2.088	4	217-3380	.3160	.5520	2.128	2	217-3987
.2765	.4345	1.550	1	217-4039	.3160	.5530	2.085	2	217-3435
.2765	.4955	1.930	2	217-4081	.3160	.5530	2.320	4	217-3990
.2765	.4955	1.930	3	217-4080	.3160	.5640	1.656	2	217-3678
.2770	.4330	1.790	1	217-3331	.3160	.5640	2.281	2	217-3619
.2770	.4750	1.970	1	217-3199	.3160	.5830	2.320	2	217-3336
.2770	.4750	2.160	1	217-3200	.3160	.5830	2.770	2	217-3335
.2770	.5140	1.740	1	217-4006	.3161	.5030	2.126	3	217-3449
.2807	.5830	2.320	2	217-4020	.3170	.5020	2.000	2	217-3425
.2807	.5830	2.770	2	217-4019	.3170	.5530	2.177	3	217-3378
.3120	.4390	1.875	3	217-3178	.3170	.5640	1.813	3	217-3717
.3120	.4390	1.875	3	217-3227	.3175	.5020	2.000	2	217-4022
.3120	.4390	2.281	3	217-3150	.3175	.5350	2.525	5	217-4028
.3120	.4860	2.094	2	217-3568	.3180	.5520	1.990	1	217-3197
.3120	.5020	2.000	2	217-3250	.3180	.5520	2.000	1	217-3275
.3120	.5320	2.094	2	217-3697	.3180	.5530	2.360	4	217-4014
.3120	.5640	2.750	2	217-3577	.3180	.5650	2.525	5	217-3301
.3130	.4390	2.500	3	217-3908	.3350	.5540	2.400	5	217-3316
.3130	.5000	2.375	2	217-3946	.3420	.5020	2.375	1	217-4087
.3130	.5000	2.500	3	217-3832	.3420	.5020	2.875	3	217-3305
.3130	.5640	2.563	2	217-3703	.3420	.5630	2.812	3	217-3288
.3130	.5640	2.688	2	217-3852	.3430	.5020	2.000	3	217-3276
.3130	.6270	1.500	2	217-3636	.3430	.5020	2.250	1	217-4088
.3130	.6570	2.125	2	217-3503	.3430	.5020	2.250	3	217-3167

## VALVE GUIDE PROGRESSIVE SIZE CHART

Types: 1-Grooved    2-Stepped    3-Plain    4-Undercut    5-Flanged    6-Shoulder

Inside Diameter	Outside Diameter	Overall Length	Type	Part Number	Inside Diameter	Outside Diameter	Overall Length	Type	Part Number
.3430	.5020	2.250	3	217-3192	.3730	.5020	2.375	3	217-4044
.3430	.5020	2.375	1	217-3193	.3730	.5020	2.625	1	217-4101
.3430	.5020	2.375	1	217-4084	.3730	.5020	2.750	1	217-4099
.3430	.5020	2.375	3	217-3166	.3730	.5020	2.750	3	217-3175
.3430	.5020	2.500	1	217-4085	.3730	.5020	2.875	1	217-4097
.3430	.5020	2.500	1	217-4089	.3730	.5020	2.875	3	217-3152
.3430	.5020	2.625	3	217-3164	.3730	.5650	2.875	3	217-3244
.3430	.5020	2.750	3	217-3165	.3730	.6260	2.785	2	217-3273
.3430	.5020	2.750	3	217-3232	.3730	.6270	3.500	2	217-4057
.3430	.5020	2.875	3	217-3151	.3735	.6255	2.420	1	217-4103
.3430	.5020	2.875	3	217-3172	.3740	.5020	2.250	3	217-3291
.3430	.5020	3.063	3	217-3181	.3740	.5020	2.375	1	217-4083
.3430	.5020	3.063	3	217-3240	.3740	.5020	2.375	3	217-3173
.3430	.5590	2.275	3	217-4005.002	.3740	.5020	2.375	3	217-3191
.3430	.5640	2.250	3	217-3255	.3740	.5020	2.375	3	217-3235
.3430	.5640	2.875	3	217-3254	.3740	.5020	2.375	3	217-4090
.3430	.5650	2.187	3	217-3758	.3740	.5020	2.500	3	217-3189
.3430	.5650	2.875	3	217-3243	.3740	.5020	2.625	1	217-4095
.3430	.5650	3.344	2	217-3732	.3740	.5020	2.625	3	217-3170
.3430	.5950	2.625	2	217-3544	.3740	.5020	2.625	3	217-3190
.3430	.6270	2.188	2	217-3900	.3740	.5020	2.625	3	217-3234
.3430	.6570	2.188	2	217-3620	.3740	.5020	2.875	3	217-3180
.3430	.6570	2.438	2	217-3872	.3740	.5020	2.875	3	217-3228
.3430	.6570	2.531	2	217-3873	.3740	.5020	3.063	1	217-4098
.3430	.6570	2.688	2	217-3673	.3740	.5020	3.063	3	217-4041
.3430	.6570	2.813	2	217-3338	.3740	.5640	2.625	3	217-3307
.3430	.6580	2.563	2	217-3515	.3740	.5640	2.875	3	217-3253
.3440	.5020	2.125	1	217-4100	.3740	.6200	2.200	2	217-3333
.3440	.5020	2.188	5	217-3187	.3740	.6200	2.563	2	217-3982
.3440	.5020	2.188	5	217-3238	.3740	.6200	2.630	2	217-3185
.3440	.5020	2.250	1	217-4086	.3740	.6205	2.435	5	217-3434
.3440	.5020	2.250	3	217-3230	.3740	.6205	2.740	2	217-4026
.3440	.5020	2.250	3	217-4042	.3740	.6250	2.422	2	217-3184
.3440	.5020	2.375	3	217-3229	.3740	.6250	2.422	2	217-3981
.3440	.5020	2.500	1	217-4094	.3740	.6260	2.312	3	217-3268
.3440	.5020	2.625	3	217-3231	.3740	.6260	2.625	3	217-3269
.3440	.5020	2.875	3	217-3226	.3740	.6260	2.750	4	217-3252
.3440	.5200	2.219	4	217-3918	.3740	.6260	2.781	3	217-3267
.3440	.5640	2.625	3	217-3804	.3740	.6260	3.187	3	217-3266
.3440	.5640	3.000	2	217-3980	.3740	.6270	2.600	3	217-3450
.3440	.5640	3.250	2	217-3979	.3740	.6580	2.812	3	217-3260
.3440	.5650	2.438	3	217-3527	.3740	.6910	2.969	2	217-3978
.3440	.5950	2.938	2	217-3545	.3740	.6910	3.250	2	217-3977
.3440	.6010	2.250	3	217-3819	.3744	.6260	2.595	3	217-3437
.3440	.6260	002.312	5	217-3891	.3745	.6262	2.160	5	217-4077
.3440	.6270	2.375	2	217-3860	.3745	.8780	5.065	2	217-4069
.3440	.6270	2.875	2	217-3896	.3745	.8780	5.450	2	217-4070
.3440	.6570	1.813	3	217-3833	.3747	.6265	3.875	2	217-4058
.3440	.6570	2.719	2	217-3379	.3750	.5020	2.500	3	217-3182
.3440	.6570	2.938	2	217-3613	.3750	.5020	2.500	3	217-3236
.3440	.6570	3.125	2	217-3874	.3750	.5020	2.750	1	217-4096
.3440	.6570	3.250	2	217-3875	.3750	.5640	2.750	3	217-4071
.3440	.7510	2.547	4	217-3726	.3750	.5640	3.000	3	217-3306
.3440	.7510	2.937	4	217-3249	.3750	.6250	2.600	4	217-3245
.3440	1.0300	2.219	5	217-3614	.3750	.6250	2.938	2	217-3897
.3450	.4700	2.125	5	217-3974	.3750	.6250	3.313	2	217-3898
.3450	.5020	2.125	3	217-3426	.3750	.6260	2.281	2	217-3271
.3450	.5640	2.125	2	217-3944	.3750	.6260	2.406	2	217-3270
.3450	.5640	2.250	2	217-3943	.3750	.6260	2.500	3	217-3693
.3450	.5640	2.266	2	217-3745	.3750	.6260	2.563	2	217-3937
.3450	.5640	3.250	3	217-3680	.3750	.6260	2.750	4	217-3733
.3450	.5670	2.250	3	217-3854	.3750	.6270	2.500	5	217-3438
.3450	.6570	2.813	2	217-3337	.3750	.6270	2.813	3	217-3881
.3453	.5640	4.000	5	217-4076	.3750	.6270	3.968	3	217-3286
.3540	.5140	2.400	5	217-3413	.3750	.6570	2.344	2	217-3618
.3720	.5020	3.000	3	217-3444	.3750	.6570	2.750	2	217-3504
.3730	.4810	2.615	5	217-3334	.3750	.6570	3.063	2	217-3342
.3730	.5020	2.375	3	217-3304	.3750	.6580	2.375	2	217-3704

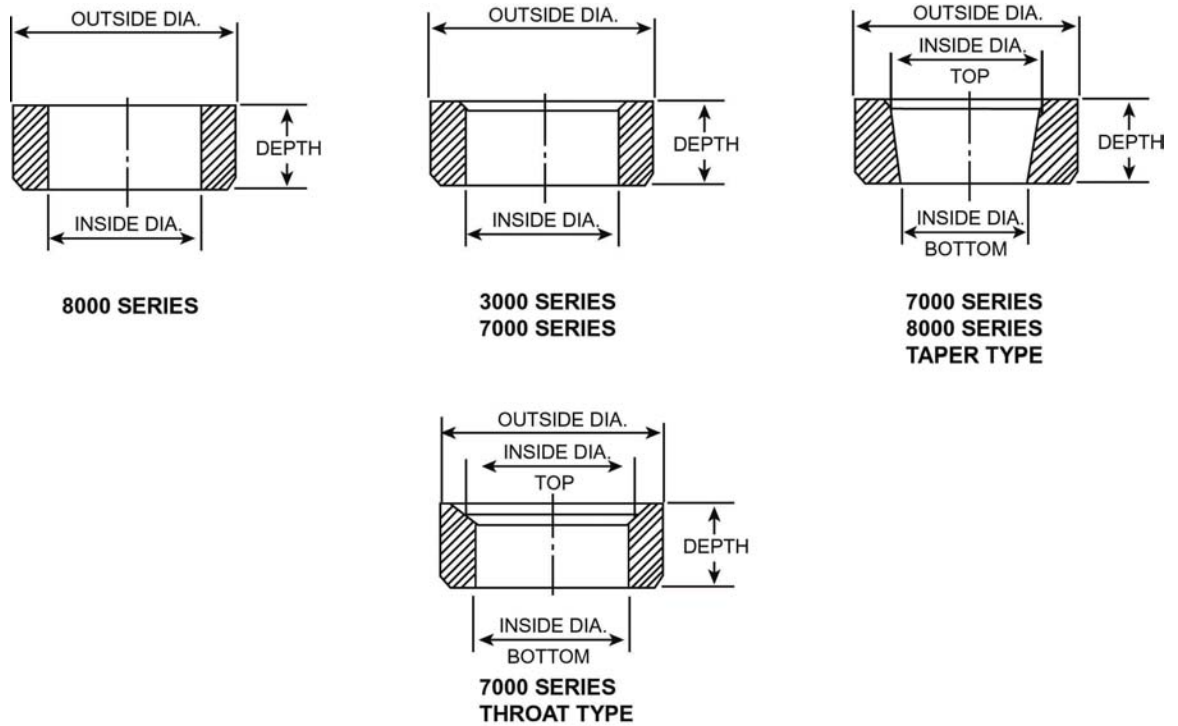
## VALVE GUIDE PROGRESSIVE SIZE CHART

*Types: 1-Grooved    2-Stepped    3-Plain    4-Undercut    5-Flanged    6-Shoulder*

Inside Diameter	Outside Diameter	Overall Length	Type	Part Number	Inside Diameter	Outside Diameter	Overall Length	Type	Part Number
.3750	.6886	3.155	1	217-4091	.4370	.7520	2.875	2	217-3701
.3750	.6890	2.344	3	217-3853	.4375	.7835	3.188	2	217-4072
.3750	.6890	2.750	2	217-3421	.4380	.6270	2.750	3	217-3177
.3750	.6890	2.781	2	217-3546	.4380	.6890	3.188	2	217-3951
.3750	.6890	2.815	2	217-3258	.4380	.7840	3.188	2	217-3967
.3750	.6890	2.960	2	217-3325	.4380	.8140	3.125	2	217-3813
.3750	.6890	3.219	2	217-3547	.4380	.8140	3.438	2	217-3814
.3750	.6890	3.250	2	217-3259	.4385	.6890	3.344	3	217-4061
.3750	.6890	3.750	3	217-3579	.4385	.6890	3.406	5	217-4051
.3750	.6892	2.815	2	217-4063	.4385	.6890	4.125	5	217-4047
.3750	.6900	2.844	2	217-3859	.4390	.6260	3.063	2	217-3817
.3750	.6900	3.281	2	217-3840	.4390	.6890	3.060	2	217-3311
.3750	.6900	3.344	2	217-3858	.4390	.6890	3.060	3	217-3310
.3752	.6270	3.012	3	217-3445	.4390	.6890	3.063	2	217-3696
.3760	.6270	2.250	2	217-3272	.4390	.6900	3.094	3	217-3839
.3760	.6270	2.406	2	217-3747	.4390	.6910	2.813	2	217-3695
.3763	.6280	2.285	5	217-4075	.4390	.6920	3.250	2	217-3816
.3770	.6270	2.500	5	217-3439	.4390	.8770	3.875	2	217-3600
.3770	.6890	2.906	4	217-3836	.4400	.8140	4.250	5	217-3711
.3771	.6579	3.220	2	217-4053	.4410	.8140	4.250	6	217-3283
.3810	.6260	2.500	1	217-3289	.4530	.7520	3.000	5	217-3210
.3819	.6506	2.633	1	217-4082	.4530	.7520	3.438	3	217-3916
.3820	.6500	2.934	4	217-3332	.4977	.8461	3.805	4	217-4073
.3870	.6200	3.038	3	217-3284	.4977	.8461	3.805	5	217-3446
.4050	.7515	3.219	2	217-4065	.4995	.8140	3.656	3	217-4062
.4050	.7520	3.219	2	217-3865	.4995	.8770	5.438	2	217-4046
.4050	.7520	3.438	4	217-3606	.5000	.6650	3.500	2	217-3810
.4050	.7520	3.594	2	217-3830	.5000	.8130	3.500	5	217-3973
.4050	.7520	3.750	1	217-3727	.5000	.8780	4.750	2	217-3644
.4050	.7520	4.375	2	217-3829	.5005	.8770	4.281	5	217-4074
.4060	.7530	2.875	2	217-3533	.5005	.8770	4.313	2	217-4045
.4190	.6890	2.906	2	217-3211	.5005	.8770	4.500	5	217-4048
.4370	.6270	2.500	3	217-3174	.5005	.8770	5.938	5	217-4049
.4370	.6270	2.500	3	217-3242	.5005	.9386	5.250	5	217-4056
.4370	.6270	2.625	3	217-3176	.5020	.6690	3.500	2	217-3251
.4370	.6270	2.625	3	217-3241	.5020	.9390	5.250	5	217-4055
.4370	.6270	3.125	3	217-3183	.6845	1.2525	6.625	3	217-4060
.4370	.6270	3.125	3	217-3239	.8745	1.3765	6.125	5	217-4064
.4370	.7510	3.125	5	217-3914					

# Valve Seat Inserts

## Illustrations of various types of valve seat inserts cataloged



There are three groups of valve seat inserts, each being made of a different material and readily identified by the series number.

4000 Series are powdered metal seats. This material causes less wear on cutting tools, and the thermal expansion is very similar to that of aluminum for use in aluminum heads.

4500 Series inserts are made of a non-magnetic, nickel-based alloy. These seats are recommended for use with propane, LPG, and other engines where operating conditions are more severe than average.

7000-8000 Series are made of an Iron based, high-chrome alloy. These seats are designed for unleaded fuels and diesel applications. This material is also easily machined.

## VALVE SEAT INSERT NUMERICAL

Part Number	Counterbore Diameter	Part Number	Counterbore Diameter	Part Number	Counterbore Diameter	Part Number	Counterbore Diameter
218-3690	1.875	218-7445	1.500	218-7623	1.812	218-7844 *	1.750
218-3732	2.000	218-7447	1.562	218-7627	1.812	218-7845	1.437
218-3732.003	2.003	218-7448	1.562	218-7631	1.875	218-7846	1.312
218-3732.010	2.010	218-7450 *	1.562	218-7635	1.875	218-7847 *	1.875
218-3732.020	2.020	218-7463	1.500	218-7643	1.937	218-7848	1.625
218-3786	2.188	218-7464	1.500	218-7651	1.812	218-7852 *	1.812
218-4000	1.812	218-7467	1.504	218-7661	1.875	218-7854 *	1.625
218-4001	1.437	218-7471	1.562	218-7669	1.937	218-7857 *	1.625
218-4002	1.562	218-7473	1.562	218-7670	1.937	218-7862 *	1.625
218-4003	1.750	218-7481	1.625	218-7677	1.875	218-7867 *	1.937
218-4004	1.687	218-7483	1.625	218-7687	1.875	218-7868 *	1.562
218-4005	1.687	218-7487	1.512	218-7697	1.937	218-7869	1.500
218-4006	1.562	218-7493	1.562	218-7703	2.000	218-7876	1.801
218-4007	1.625	218-7493.005	1.567	218-7705	2.000	218-7877	1.625
218-4008	1.875	218-7493.010	1.572	218-7708	2.000	218-7878	1.998
218-4009	1.812	218-7493.015	1.577	218-7721	1.948	218-7879	2.438
218-4010	1.500	218-7493.030	1.592	218-7729	1.937	218-7881	2.250
218-4011	1.625	218-7495 *	1.562	218-7733	2.000	218-7882	1.816
218-4012	1.500	218-7497	1.562	218-7737	2.062	218-7882.010	1.816
218-4013	2.125	218-7497.010	1.572	218-7739	2.080	218-7906.020	1.685
218-4014 *	1.687	218-7499	1.625	218-7739.020	2.105	218-7907.020	1.470
218-4015	1.312	218-7501	1.625	218-7739.030	2.115	218-7909.020	1.590
218-4016	1.625	218-7503	1.687	218-7739.062	2.146	218-7910.020	1.595
218-4017	1.687	218-7505	1.687	218-7751	2.000	218-7911.020	1.392
218-4018 *	1.562	218-7506	1.687	218-7763	2.125	218-7914.020	1.775
218-4019 *	1.500	218-7507	1.750	218-7781	2.062	218-7918	1.625
218-4020 *	1.500	218-7511	1.621	218-7783	2.125	218-7919	1.437
218-4021	2.000	218-7521 *	1.625	218-7785	2.187	218-7920	1.664
218-4500	1.812	218-7521.010 *	1.635	218-7795	2.010	218-7921	1.937
218-4501	1.437	218-7521.020 *	1.645	218-7799	1.843	218-7924 *	1.562
218-4502	1.562	218-7521.030 *	1.655	218-7800	1.684	218-7926	1.500
218-4503 *	1.562	218-7525	1.625	218-7801	2.125	218-7927	1.875
218-4504	1.687	218-7525.005	1.630	218-7802	1.875	218-7937	2.250
218-4505	1.750	218-7525.010	1.635	218-7803	1.437	218-7939	1.750
218-7323	1.000	218-7525.030	1.655	218-7804	1.500	218-7940	1.562
218-7349	1.125	218-7531	1.562	218-7805	1.684	218-7941	2.125
218-7361	1.187	218-7535	1.625	218-7806	1.809	218-7942	2.250
218-7369	1.250	218-7535.005	1.630	218-7807	1.909	218-7943 *	1.500
218-7370	1.250	218-7535.010	1.635	218-7808	2.146	218-7944 *	1.500
218-7373 *	1.258	218-7535.015	1.640	218-7809	2.000	218-7945 *	1.250
218-7373.020 *	1.278	218-7536	1.625	218-7810	2.500	218-7946	1.312
218-7373.030 *	1.288	218-7537	1.625	218-7811	2.430	218-7947	1.812
218-7379	1.375	218-7537.010	1.635	218-7812	2.500	218-7949	1.437
218-7389	1.312	218-7543	1.687	218-7813 *	1.439	218-7951	1.625
218-7390	1.312	218-7545	1.687	218-7813.010 *	1.449	218-7952 *	2.062
218-7393	1.375	218-7545.005	1.692	218-7813.020 *	1.459	218-7999	1.691
218-7395	1.437	218-7547	1.687	218-7814	2.015	218-8000	1.187
218-7405	1.345	218-7551	1.750	218-7815	1.687	218-8001	1.335
218-7405.030	1.375	218-7553	1.750	218-7817 *	1.156	218-8002 *	1.625
218-7408	1.344	218-7555	1.750	218-7817.010 *	1.166	218-8002.010 *	1.635
218-7411	1.375	218-7559	1.750	218-7817.020 *	1.176	218-8002.020 *	1.645
218-7417	1.375	218-7577	1.675	218-7817.030	1.186	218-8002.030 *	1.655
218-7418	1.375	218-7581	1.687	218-7818	2.586	218-8003 *	1.815
218-7419	1.437	218-7585	1.750	218-7819	1.438	218-8003.010 *	1.826
218-7421	1.437	218-7587	1.750	218-7820	1.687	218-8003.020 *	1.836
218-7423	1.437	218-7595	1.812	218-7828 *	1.815	218-8003.030 *	1.846
218-7424	1.437	218-7597	1.812	218-7829 *	1.500	218-8753	2.000
218-7425	1.500	218-7598	1.812	218-7832	1.437	218-8807	2.250
218-7439	1.437	218-7601	1.875	218-7840 *	1.250		
218-7441	1.437	218-7617	1.750	218-7841	2.375		
218-7443	1.500	218-7619	1.750	218-7843 *	1.500		

\* Tapered Insert

## VALVE SEAT INSERTS PROGRESSIVE (By Counterbore Diameter)

Counterbore Diameter	Inside Diameter	Depth	Part Number	Counterbore Diameter	Inside Diameter	Depth	Part Number
1.000	.750	.187	218-7323	1.562	1.187	.218	218-7447
1.125	.875	.218	218-7349	1.562	1.187	.312	218-7450 *
1.156	.910	.222	218-7817 *	1.562	1.187	.375	218-7448
1.166	.910	.222	218-7817.010 *	1.562	1.250	.218	218-7471
1.176	.910	.222	218-7817.020 *	1.562	1.250	.250	218-7473
1.186	.950	.222	218-7817.030	1.562	1.255	.320	218-7868 *
1.187	.905	2.570	218-8000	1.562	1.265	.280	218-4018 *
1.187	1.000	.187	218-7361	1.562	1.294	.280	218-7924 *
1.250	.905	.230	218-7945 *	1.562	1.312	.218	218-4006
1.250	.965	.250	218-7840 *	1.562	1.312	.218	218-7493
1.250	1.000	.218	218-7369	1.562	1.312	.219	218-4502
1.250	1.000	.375	218-7370	1.562	1.312	.250	218-4503 *
1.258	.975	.250	218-7373 *	1.562	1.312	.250	218-7495 *
1.278	.975	.250	218-7373.020 *	1.562	1.312	.250	218-7497
1.288	.975	.250	218-7373.030 *	1.562	1.375	.218	218-7531
1.312	.980	.293	218-7846	1.562	5.313	.188	218-4002
1.312	1.042	.238	218-4015	1.567	1.312	.218	218-7493.005
1.312	1.042	.238	218-7946	1.572	1.312	.218	218-7493.010
1.312	1.062	.187	218-7389	1.572	1.312	.250	218-7497.010
1.312	1.063	.375	218-7390	1.577	1.312	.218	218-7493.015
1.335	1.024	.335	218-8001	1.590	1.300	.330	218-7909.020
1.344	1.125	.200	218-7408	1.592	1.312	.218	218-7493.030
1.345	1.089	.207	218-7405	1.595	1.300	.275	218-7910.020
1.375	1.000	.187	218-7379	1.621	1.330	.379	218-7511
1.375	1.062	.187	218-7393	1.625	1.250	.250	218-7481
1.375	1.089	.207	218-7405.030	1.625	1.250	.312	218-7483
1.375	1.125	.187	218-7411	1.625	1.255	.300	218-7854 *
1.375	1.125	.265	218-7417	1.625	1.256	.292	218-7857 *
1.375	1.125	.375	218-7418	1.625	1.280	.315	218-7862 *
1.392	1.075	.310	218-7911.020	1.625	1.312	.218	218-4007
1.437	1.062	.187	218-7395	1.625	1.312	.218	218-7499
1.437	1.100	.293	218-7845	1.625	1.312	.250	218-7501
1.437	1.105	.322	218-7919	1.625	1.320	.300	218-4011
1.437	1.120	.256	218-7832	1.625	1.320	.300	218-7918
1.437	1.125	.187	218-7419	1.625	1.329	.280	218-4016
1.437	1.125	.219	218-7421	1.625	1.329	.280	218-7951
1.437	1.125	.250	218-7423	1.625	1.330	.313	218-7525
1.437	1.187	.218	218-7439	1.625	1.345	.250	218-7521 *
1.437	1.187	.250	218-7441	1.625	1.348	.365	218-7877
1.437	1.188	.375	218-7424	1.625	1.357	.269	218-8002 *
1.437	1.218	.218	218-4001	1.625	1.375	.218	218-7535
1.437	1.218	.218	218-4501	1.625	1.375	.250	218-7537
1.437	1.220	.343	218-7803	1.625	1.375	.315	218-7848
1.437	1.250	.218	218-7949	1.625	1.375	.375	218-7536
1.438	1.219	.219	218-7819	1.630	1.330	.313	218-7525.005
1.439	1.141	.250	218-7813 *	1.630	1.375	.218	218-7535.005
1.449	1.141	.250	218-7813.010 *	1.635	1.330	.313	218-7525.010
1.459	1.141	.250	218-7813.020 *	1.635	1.345	.250	218-7521.010 *
1.470	1.220	.350	218-7907.020	1.635	1.357	.269	218-8002.010 *
1.500	1.125	.187	218-7425	1.635	1.375	.218	218-7535.010
1.500	1.174	.294	218-7829 *	1.635	1.375	.250	218-7537.010
1.500	1.175	.236	218-4020 *	1.640	1.375	.218	218-7535.015
1.500	1.175	.236	218-7944 *	1.645	1.345	.250	218-7521.020 *
1.500	1.180	.214	218-7943 *	1.645	1.357	.269	218-8002.020 *
1.500	1.187	.218	218-7443	1.655	1.330	.313	218-7525.030
1.500	1.187	.250	218-7445	1.655	1.345	.250	218-7521.030 *
1.500	1.210	.345	218-4019 *	1.655	1.357	.269	218-8002.030 *
1.500	1.220	.310	218-7843 *	1.664	1.372	.272	218-7920
1.500	1.230	.278	218-7926	1.675	1.446	.314	218-7577
1.500	1.243	.315	218-7869	1.684	1.437	.365	218-7805
1.500	1.250	.187	218-4012	1.684	1.445	.181	218-7800
1.500	1.250	.218	218-4010	1.685	1.375	.300	218-7906.020
1.500	1.250	.218	218-7463	1.687	1.250	.375	218-7815
1.500	1.250	.335	218-7804	1.687	1.312	.219	218-7503
1.500	1.250	.375	218-7464	1.687	1.312	.250	218-7505
1.504	1.250	.250	218-7467	1.687	1.312	.375	218-7506
1.512	1.250	.250	218-7487	1.687	1.344	.312	218-4017
1.562	1.180	.316	218-7940	1.687	1.375	.218	218-4005

\* Tapered Insert



## VALVE SEAT INSERTS PROGRESSIVE (By Counterbore Diameter)

Counterbore Diameter	Inside Diameter	Depth	Part Number	Counterbore Diameter	Inside Diameter	Depth	Part Number
1.687	1.375	.218	218-7543	1.875	1.625	.218	218-4008
1.687	1.375	.250	218-7545	1.875	1.625	.250	218-3690
1.687	1.375	.313	218-7547	1.875	1.640	.280	218-7927
1.687	1.390	.305	218-4014 *	1.909	1.632	.285	218-7807
1.687	1.406	.250	218-4504	1.937	1.500	.250	218-7643
1.687	1.437	.250	218-7581	1.937	1.563	.250	218-7669
1.687	1.438	.218	218-4004	1.937	1.563	.375	218-7670
1.687	1.438	.219	218-7820	1.937	1.575	.380	218-7867 *
1.691	1.430	.200	218-7999	1.937	1.625	.281	218-7697
1.692	1.375	.250	218-7545.005	1.937	1.687	.187	218-7921
1.750	1.312	.250	218-7507	1.937	1.688	.250	218-7729
1.750	1.375	.218	218-7551	1.948	1.656	.348	218-7721
1.750	1.375	.250	218-7553	1.998	1.712	.385	218-7878
1.750	1.375	.312	218-7555	2.000	1.625	.281	218-7703
1.750	1.375	.375	218-7559	2.000	1.625	.296	218-7705
1.750	1.415	.316	218-7939	2.000	1.625	.375	218-7708
1.750	1.437	.218	218-7585	2.000	1.687	.281	218-3732
1.750	1.437	.250	218-7587	2.000	1.687	.281	218-7733
1.750	1.455	.310	218-7844 *	2.000	1.690	.437	218-7809
1.750	1.500	.218	218-7617	2.000	1.750	.218	218-7751
1.750	1.500	.219	218-4003	2.000	1.750	.219	218-4021
1.750	1.500	.219	218-4505	2.000	1.750	.281	218-8753
1.750	1.500	.250	218-7619	2.003	1.687	.281	218-3732.003
1.775	1.505	.280	218-7914.020	2.010	1.687	.281	218-3732.010
1.801	1.571	.312	218-7876	2.010	1.828	.188	218-7795
1.809	1.562	.365	218-7806	2.015	1.590	.281	218-7814
1.812	1.437	.250	218-7595	2.020	1.687	.281	218-3732.020
1.812	1.437	.314	218-7597	2.062	1.687	.281	218-7737
1.812	1.438	.375	218-7598	2.062	1.812	.250	218-7952 *
1.812	1.500	.218	218-4009	2.062	1.812	.281	218-7781
1.812	1.500	.250	218-7623	2.080	1.692	.299	218-7739
1.812	1.500	.312	218-7627	2.105	1.692	.299	218-7739.020
1.812	1.530	.305	218-7852 *	2.115	1.692	.299	218-7739.030
1.812	1.562	.218	218-4000	2.125	1.750	.281	218-7763
1.812	1.562	.218	218-4500	2.125	1.800	.438	218-7801
1.812	1.562	.218	218-7947	2.125	1.812	.250	218-7783
1.812	1.562	.250	218-7651	2.125	1.875	.250	218-4013
1.815	1.500	.278	218-7828 *	2.125	1.875	.250	218-7941
1.815	1.571	.303	218-8003 *	2.146	1.692	.299	218-7739.062
1.816	1.520	.197	218-7882	2.146	1.856	.292	218-7808
1.816	1.520	.197	218-7882.010	2.187	1.812	.281	218-7785
1.826	1.571	.303	218-8003.010 *	2.188	1.813	.250	218-3786
1.836	1.571	.303	218-8003.020 *	2.250	1.875	.281	218-7937
1.843	1.560	.282	218-7799	2.250	1.875	.281	218-8807
1.846	1.571	.303	218-8003.030 *	2.250	1.937	.218	218-7942
1.875	1.437	.250	218-7601	2.250	1.938	.188	218-7881
1.875	1.500	.250	218-7631	2.375	2.000	.282	218-7841
1.875	1.500	.375	218-7635	2.430	2.130	.625	218-7811
1.875	1.562	.250	218-7661	2.438	2.046	.299	218-7879
1.875	1.565	.437	218-7802	2.500	2.000	.497	218-7812
1.875	1.577	.315	218-7847 *	2.500	2.062	.497	218-7810
1.875	1.593	.250	218-7677	2.586	2.281	.625	218-7818
1.875	1.610	.250	218-7687				

\* Tapered Insert

## Expansion Plugs By Part Number



**Disc Type**

**1000 – Steel      6000 - Brass**

Part No. Steel	Part No. Brass	Size	Part No. Steel	Part No. Brass	Size
219-1002		5/8"	219-1037		7/16"
219-1003	219-6003	3/4"	219-1043		1-15/16"
219-1006		7/8"	219-1044		2-1/8"
219-1007		15/16"	219-1045		11/16"
219-1008	219-6008	1"	219-1046		1/2"
219-1009		1-1/16"	219-1047		9/16"
219-1010	219-6010	1-1/8"	219-1068		2-1/16"
219-1011	219-6011	1-1/4"	219-1102	219-6102	1-31/64"
219-1012	219-6012	1-3/8"	219-1103		1-47/64"
219-1013	219-6013	1-1/2"	219-1129		2.105"
219-1014	219-6014	1-5/8"	219-1131*		24mm
219-1015	219-6015	1-3/4"	219-1132*		21mm
219-1020	219-6020	1-7/8"	219-1133*	219-6133	35mm
219-1021	219-6021	1-3/16"	219-1134*		40mm
219-1022		2-1/4"	219-1135		18mm
219-1023		1-5/16"	219-1136		16mm
219-1026	219-6026	2"	219-1137		57.94mm



**Shallow Cup Type**

**2000 – Steel      5000 – Stainless Steel      7000 - Brass**

Part No. Steel	Part No. Brass	Part No. Stainless Steel	Size	Part No. Steel	Part No. Brass	Part No. Stainless Steel	Size
219-2057			1-3/4"	219-2160			12mm
219-2058			1-31/32"	219-2161*			1.885"
219-2059	219-7059		2-1/16"	219-2162			.317"
219-2066	219-7066	219-5066	2"	219-2163			14.4mm
219-2071			2-5/32"	219-2164			.561"
219-2074	219-7074		2-3/16"	219-2165			.475"
219-2076	219-7076		1-45/64"	219-2166			.260"
219-2078			2-7/64"	219-2167			.637"
219-2083			2-1/64"	219-2168	219-7168		28mm
219-2096			1-51/64"	219-2169			5/8"
219-2098			.540"	219-2170			2-9/64"
219-2110	219-7110	219-5110	1-1/4"	219-2172			1-59/64"
219-2126	219-7126	219-5126	1-5/8"	219-2173			1-53/64"
219-2127			1-21/64"	219-2180			20mm
219-2150			2-3/32"	219-2183	219-7183		1-41/64"
219-2151*	219-7151		20mm	219-2184			38mm
219-2152*	219-7152		25mm	219-2187			24mm
219-2153	219-7153		18mm	219-2189			15mm
219-2154			2-7/32"	219-2190			13/16"
219-2155	219-7155		47mm	219-2193			1-3/8"
219-2156			11mm	219-2194			2-1/2"
219-2157			2-1/4"	219-2196			1-61/64"
219-2158	219-7158		25mm	219-2197			45/64"
219-2159			40mm				

NOTE: All cup type plugs are installed with open end out with the exception of those numbers with an asterisk (\*) which are reverse tapered plugs and installed with cup end out.

## Expansion Plugs By Part Number



**Deep Cup Type**  
**2000, 3000 – Steel    5000 – Stainless Steel    8000 - Brass**

Part No. Steel	Part No. Brass	Part No. Stainless Steel	Size	Part No. Steel	Part No. Brass	Part No. Stainless Steel	Size
219-2181			1-9/16"	219-3105			.270"
219-2182			1-7/16"	219-3112			2-1/16"
219-2185			3/8"	219-3128			5/16"
219-2186			1.335"	219-3131			2-3/32"
219-2188			.666"	219-3132*		219-5132	2-1/2"
219-3016	219-8016	219-5016	1"	219-3133	219-8133	219-5133	1.507 (.325H)
219-3017	219-8017		1-7/32"	219-3134			1-13/64"
219-3025	219-8025	219-5025	1-1/8"	219-3144			11/16"
219-3029	219-8029	219-5029	7/8"	219-3147			2-3/16"
219-3030	219-8030		1.517"	219-3167	219-8167		1-29/32"
219-3038	219-8038	219-5038	3/4"	219-3168			44.5mm
219-3039	219-8039		15/16"	219-3169			.510"
219-3040	219-8040		1-15/16"	219-3170	219-8170		50.42mm
219-3041	219-8041		1-5/8"	219-3171	219-8171		35mm
219-3042	219-8042		1-61/64"	219-3172	219-8172		30mm
219-3048	219-8048		9/16"	219-3173	219-8173		32mm
219-3050	219-8050	219-5050	1-7/8"	219-3174			1-5/64"
219-3052			5/8"	219-3175	219-8175		45mm
219-3054			19/32"	219-3176	219-8176		40mm
219-3069	219-8069		2-1/64"	219-3177			42.6mm
219-3072			29/32"	219-3178			16.5mm
219-3075	219-8075	219-5075	1.758" (.363H)	219-3179	219-8179		34.3mm
219-3076			1.783"	219-3180			1.882"
219-3077			59/64"	219-3181			2.105"
219-3080	219-8080		1-3/8"	219-3183			1.632"
219-3081			2-1/4"	219-3184			.567"
219-3082	219-8082		1.758" (.593H)	219-3185	219-8185		50.17mm
219-3084			2-9/64"	219-3186			41.5mm
219-3085	219-8085		1.505 (.530H)	219-3187	219-8187		36.5mm
219-3086			1-1/16"	219-3188			25/64"
219-3087			33/64"	219-3189			8mm
219-3088			.448"	219-3190	219-8190		21.4mm
219-3089*			2.573"	219-3191			26mm
219-3090*			2.262"	219-3193			12mm
219-3092*			2.386"	219-3194			2"
219-3093			7/16"	219-3195			2-5/32"
219-3094*			37/64"	219-3196	219-8196		42.3mm
219-3095	219-8095		.525"	219-3198			1-49/64"
219-3097			.540"	219-3199			41mm
219-3099*			1-1/4"	219-3200			13/16"
219-3101			.339"	219-3201			2"

NOTE: All cup type plugs are installed with open end out with the exception of those numbers with an asterisk (\*) which are reverse tapered plugs and installed with cup end out.

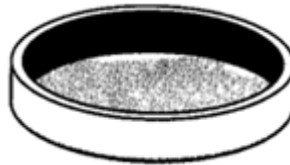
## Expansion Plugs By Size



**Disc Type**

**1000 – Steel      6000 - Brass**

Size	Part No. Steel	Part No. Brass	Size	Part No. Steel	Part No. Brass
7/16"	219-1037		1-5/16"	219-1023	
1/2"	219-1046		1-3/8"	219-1012	219-6012
9/16"	219-1047		35mm	219-1133*	219-6133
5/8"	219-1002		1-31/64"	219-1102	219-6102
16mm	219-1136		1-1/2"	219-1013	219-6013
11/16"	219-1045		40mm	219-1134*	
18mm	219-1135		1-5/8"	219-1014	219-6014
3/4"	219-1003	219-6003	1-47/64"	219-1103	
21mm	219-1132*		1-3/4"	219-1015	219-6015
7/8"	219-1006		1-7/8"	219-1020	219-6020
15/16"	219-1007		1-15/16"	219-1043	
24mm	219-1131*		2"	219-1026	219-6026
1"	219-1008	219-6008	2-1/16"	219-1068	
1-1/16"	219-1009		2.105"	219-1129	
1-1/8"	219-1010	219-6010	2-1/8"	219-1044	
1-3/16"	219-1021	219-6021	2-1/4"	219-1022	
1-1/4"	219-1011	219-6011	57.94mm	219-1137	



**Shallow Cup Type**

**2000 – Steel      5000 – Stainless Steel      7000 - Brass**

Size	Part No. Steel	Part No. Brass	Part No. Stainless Steel	Size	Part No. Steel	Part No. Brass	Part No. Stainless Steel
.260"	219-2166			40mm	219-2159		
.317"	219-2162			1-5/8"	219-2126	219-7126	219-5126
11mm	219-2156			1-41/64"	219-2183	219-7183	
12mm	219-2160			1-45/64"	219-2076	219-7076	
.475"	219-2165			1-3/4"	219-2057		
.540"	219-2098			1-51/64"	219-2096		
.561"	219-2164			1-53/64"	219-2173		
14.4mm	219-2163			47mm	219-2155	219-7155	
15mm	219-2189			1.885"	219-2161*		
5/8"	219-2169			1-59/64"	219-2172		
.637"	219-2167			1-61/64"	219-2196		
45/64"	219-2197			1-31/32"	219-2058		
18mm	219-2153	219-7153		2"	219-2066	219-7066	219-5066
20mm	219-2151*	219-7151		2-1/64"	219-2083		
20mm	219-2180			2-1/16"	219-2059	219-7059	
13/16"	219-2190			2-3/32"	219-2150		
24mm	219-2187			2-7/64"	219-2078		
25mm	219-2152*	219-7152		2-9/64"	219-2170		
25mm	219-2158	219-7158		2-5/32"	219-2071		
28mm	219-2168	219-7168		2-3/16"	219-2074	219-7074	
1-1/4"	219-2110	219-7110	219-5110	2-7/32"	219-2154		
1-21/64"	219-2127			2-1/4"	219-2157		
1-3/8"	219-2193			2-1/2"	219-2194		
38mm	219-2184						

NOTE: All cup type plugs are installed with open end out with the exception of those numbers with an asterisk (\*) which are reverse tapered plugs and installed with cup end out.

## Expansion Plugs By Size



**Deep Cup Type**  
**2000, 3000 – Steel    5000 – Stainless Steel    8000 - Brass**

Size	Part No. Steel	Part No. Brass	Part No. Stainless Steel	Size	Part No. Steel	Part No. Brass	Part No. Stainless Steel
.270"	219-3105			1-3/8"	219-3080	219-8080	
5/16"	219-3128			35mm	219-3171	219-8171	
8mm	219-3189			36.5mm	219-3187	219-8187	
.339"	219-3101			1-7/16"	219-2182		
3/8"	219-2185			1.505" (.530H)	219-3085	219-8085	
25/64"	219-3188			1.507" (.325H)	219-3133	219-8133	219-5133
7/16"	219-3093			1.517"	219-3030	219-8030	
.448"	219-3088			1-9/16"	219-2181		
12mm	219-3193			40mm	219-3176	219-8176	
.510"	219-3169			41mm	219-3199		
33/64"	219-3087			1-5/8"	219-3041	219-8041	
.525"	219-3095	219-8095		1.632"	219-3183		
.540"	219-3097			41.5mm	219-3186		
9/16"	219-3048	219-8048		42.3mm	219-3196	219-8196	
.567"	219-3184			42.6mm	219-3177		
37/64"	219-3094*			1.758" (.363H)	219-3075	219-8075	219-5075
19/32"	219-3054			1.758" (.593H)	219-3082	219-8082	
5/8"	219-3052			44.5mm	219-3168		
16.5mm	219-3178			1-49/64"	219-3198		
.666"	219-2188			45mm	219-3175	219-8175	
11/16"	219-3144			1.783"	219-3076		
3/4"	219-3038	219-8038	219-5038	1-7/8"	219-3050	219-8050	219-5050
13/16"	219-3200			1.882"	219-3180		
21.4mm	219-3190	219-8190		1-29/32"	219-3167	219-8167	
7/8"	219-3029	219-8029	219-5029	1-15/16"	219-3040	219-8040	
29/32"	219-3072			1-61/64"	219-3042	219-8042	
59/64"	219-3077			50.42mm	219-3170	219-8170	
15/16"	219-3039	219-8039		50.17mm	219-3185	219-8185	
1"	219-3016	219-8016	219-5016	2"	219-3194		
2-1/64"	219-3069	219-8069		2"	219-3201		
26mm	219-3191			2-1/16"	219-3112		
1-1/16"	219-3086			2-3/32"	219-3131		
1-5/64"	219-3174			2.105"	219-3181		
1-1/8"	219-3025	219-8025	219-5025	2-9/64"	219-3084		
30mm	219-3172	219-8172		2-5/32"	219-3195		
1-13/64"	219-3134			2 3/16"	219-3147		
1-7/32"	219-3017	219-8017		2-1/4"	219-3081		
1-1/4"	219-3099*			2.262"	219-3090*		
32mm	219-3173	219-8173		2.386"	219-3092*		
.339"	219-3101			2-1/2"	219-3132*		219-5132
1.335"	219-2186			2.573"	219-3089*		
34.3mm	219-3179	219-8179					

NOTE: All cup type plugs are installed with open end out with the exception of those numbers with an asterisk (\*) which are reverse tapered plugs and installed with cup end out.

## EXPANSION PLUG NUMERICAL SPECIFICATION

Part Number	Plug Size	Min. Plug Diameter	Max. Plug Diameter	Min. Plug Height	Max. Plug Height	Plug Type	Part Number	Plug Size	Min. Plug Diameter	Max. Plug Diameter	Min. Plug Height	Max. Plug Height	Plug Type
219-1002	5/8	.622	.628	-	-	Disc Type	219-2126	1-5/8	1.635	1.640	.355	.375	Cup Type (Shallow)
219-1003	3/4	.747	.753	-	-	Disc Type							
219-1006	7/8	.872	.878	-	-	Disc Type	219-2127	1-21/64	1.320	1.325	.271	.291	Cup Type (Shallow)
219-1007	15/16	.932	.940	-	-	Disc Type							
219-1008	1	.997	1.003	-	-	Disc Type	219-2150	2-3/32	2.100	2.105	.260	.280	Cup Type (Shallow)
219-1009	1-1/16	1.059	1.065	-	-	Disc Type							
219-1010	1-1/8	1.122	1.128	-	-	Disc Type	219-2151	20mm	.794	.800	.228	.248	Cup Type (Shallow)
219-1011	1-1/4	1.247	1.253	-	-	Disc Type	219-2152	25mm	.994	.999	.270	.290	Cup Type (Shallow)
219-1012	1-3/8	1.370	1.380	-	-	Disc Type							
219-1013	1-1/2	1.495	1.505	-	-	Disc Type	219-2153	18mm	.715	.720	.225	.245	Cup Type (Shallow)
219-1014	1-5/8	1.620	1.630	-	-	Disc Type	219-2154	2-7/32	2.218	2.223	.295	.315	Cup Type (Shallow)
219-1015	1-3/4	1.745	1.755	-	-	Disc Type							
219-1020	1-7/8	1.870	1.880	-	-	Disc Type	219-2155	47mm	1.840	1.845	.280	.300	Cup Type (Shallow)
219-1021	1-3/16	1.184	1.190	-	-	Disc Type							
219-1022	2-1/4	2.245	2.255	-	-	Disc Type	219-2156	11mm	.439	.444	.181	.201	Cup Type (Shallow)
219-1023	1-5/16	1.307	1.317	-	-	Disc Type							
219-1026	2	1.995	2.005	-	-	Disc Type	219-2157	2-1/4	2.262	2.264	.340	.360	Cup Type (Shallow)
219-1037	7/16	.435	.440	-	-	Disc Type	219-2158	25mm	.983	.988	.315	.335	Cup Type (Shallow)
219-1043	1-15/16	1.932	1.942	-	-	Disc Type							
219-1044	2-1/8	2.120	2.130	-	-	Disc Type	219-2159	40mm	1.580	1.585	.273	.293	Cup Type (Shallow)
219-1045	11/16	.684	.690	-	-	Disc Type							
219-1046	1/2	.498	.502	-	-	Disc Type	219-2160	12mm	.453	.458	.200	.220	Cup Type (Shallow)
219-1047	9/16	.560	.565	-	-	Disc Type							
219-1068	2-1/16	2.057	2.067	-	-	Disc Type	219-2161	1.885	1.893	1.898	.260	.280	Cup Type (Shallow)
219-1102	1-31/64	1.484	1.489	-	-	Disc Type	219-2162	.320	.320	.321	.195	.215	Cup Type (Shallow)
219-1103	1-47/64	1.729	1.739	-	-	Disc Type							
219-1129	2.105	2.100	2.110	-	-	Disc Type	219-2163	14.4mm	.557	.559	.255	.275	Cup Type (Shallow)
219-1131	24mm	.940	.946	-	-	Disc Type	219-2164	.561	.565	.567	.190	.210	Cup Type (Shallow)
219-1132	21mm	.795	.801	-	-	Disc Type							
219-1133	35mm	1.373	1.378	-	-	Disc Type	219-2165	.475	.479	.481	.190	.210	Cup Type (Shallow)
219-1134	40mm	1.570	1.575	-	-	Disc Type							
219-1135	18mm	.706	.712	-	-	Disc Type	219-2166	.260	.258	.263	.125	.145	Cup Type (Shallow)
219-1136	16mm	.623	.628	-	-	Disc Type	219-2167	.637	.637	.639	.225	.245	Cup Type (Shallow)
219-1137	2.28	2.275	2.285	-	-	Disc Type							
219-2057	1-3/4	1.760	1.765	.240	.250	Cup Type (Shallow)	219-2168	28mm	1.100	1.105	.331	.351	Cup Type (Shallow)
219-2058	1-31/32	1.975	1.980	.209	.229	Cup Type (Shallow)	219-2169	5/8	.633	.638	.171	.175	Cup Type (Shallow)
219-2059	2-1/16	2.070	2.075	.328	.358	Cup Type (Shallow)	219-2170	2-9/64	2.134	2.136	.350	.370	Cup Type (Shallow)
219-2066	2	2.022	2.028	.396	.416	Cup Type (Shallow)	219-2172	1-59/64	1.920	1.922	.225	.245	Cup Type (Shallow)
219-2071	2-5/32	2.151	2.156	.318	.338	Cup Type (Shallow)	219-2173	1-53/64	1.824	1.826	.340	.360	Cup Type (Shallow)
219-2074	2-3/16	2.190	2.195	.334	.354	Cup Type (Shallow)	219-2180	20mm	.796	.801	.308	.328	Cup Type (Shallow)
219-2076	1-45/64	1.700	1.705	.271	.291	Cup Type (Shallow)	219-2181	1-9/16	1.569	1.574	.295	.315	Cup Type (Shallow)
219-2078	2-7/64	2.108	2.110	.286	.296	Cup Type (Shallow)	219-2182	1-7/16	1.452	1.147	.418	.438	Cup Type (Shallow)
219-2083	2-1/64	2.015	2.020	.230	.250	Cup Type (Shallow)	219-2183	1-41/64	1.640	1.645	.340	.360	Cup Type (Shallow)
219-2096	1-51/64	1.800	1.805	.240	.260	Cup Type (Shallow)	219-2184	38mm	1.506	1.511	.323	.343	Cup Type (Shallow)
219-2098	.540	.540	.545	.178	.198	Cup Type (Shallow)	219-2185	3/8	.382	.383	.155	.175	Cup Type (Shallow)
219-2110	1-1/4	1.260	1.265	.303	.323	Cup Type (Shallow)	219-2186	1.335	1.335	1.337	.280	.300	Cup Type (Shallow)

## EXPANSION PLUG NUMERICAL SPECIFICATION

Part Number	Plug Size	Min. Plug Diameter	Max. Plug Diameter	Min. Plug Height	Max. Plug Height	Plug Type	Part Number	Plug Size	Min. Plug Diameter	Max. Plug Diameter	Min. Plug Height	Max. Plug Height	Plug Type
219-2187	24mm	.954	.956	.275	.295	Cup Type (Shallow)	219-3086	1-1/16	1.074	1.079	.631	.651	Cup Type (Deep)
219-2188	.666	.666	.668	.230	.250	Cup Type (Shallow)	219-3087	33/64	.517	.522	.178	.198	Cup Type (Deep)
219-2189	15mm	.589	.594	.208	.228	Cup Type (Shallow)	219-3088	29/64	.439	.452	.168	.208	Cup Type (Deep)
219-2190	13/16	.823	.827	.232	.242	Cup Type (Shallow)	219-3089	2.573	2.573	2.577	.291	.311	Cup Type (Deep)
219-2193	1-3/8	1.386	1.390	.337	.357	Cup Type (Shallow)	219-3090	2.262	2.262	2.266	.345	.365	Cup Type (Deep)
219-2194	2-1/2	2.510	2.514	.401	.421	Cup Type (Shallow)	219-3092	2.386	2.394	2.398	.300	.320	Cup Type (Deep)
219-2196	1 61/64	1.948	1.960	.344	.346	Cup Type (Shallow)	219-3093	7/16	.422	.447	.146	.166	Cup Type (Deep)
219-2197	45/64	.697	.704	.203	.207	Cup Type (Shallow)	219-3094	37/64	.570	.574	.193	.213	Cup Type (Deep)
219-3016	1	1.012	1.015	.271	.291	Cup Type (Deep)	219-3095	1/2	.525	.529	.302	.322	Cup Type (Deep)
219-3017	1-7/32	1.225	1.230	.209	.229	Cup Type (Deep)	219-3097	.540	.540	.545	.240	.260	Cup Type (Deep)
219-3025	1-1/8	1.130	1.135	.428	.448	Cup Type (Deep)	219-3099	1-1/4	1.255	1.260	.334	.354	Cup Type (Deep)
219-3029	7/8	.885	.890	.303	.323	Cup Type (Deep)	219-3101	.339	.339	.342	.225	.240	Cup Type (Deep)
219-3030	1-1/2	1.518	1.522	.365	.385	Cup Type (Deep)	219-3105	.270	.270	.275	.190	.210	Cup Type (Deep)
219-3038	3/4	.760	.765	.255	.275	Cup Type (Deep)	219-3112	2-1/16	2.065	2.070	.500	.520	Cup Type (Deep)
219-3039	15/16	.942	.947	.365	.385	Cup Type (Deep)	219-3128	5/16	.312	.315	.287	.307	Cup Type (Deep)
219-3040	1-15/16	1.945	1.950	.677	.697	Cup Type (Deep)	219-3131	2-3/32	2.095	2.100	.600	.620	Cup Type (Deep)
219-3041	1-5/8	1.639	1.643	.490	.510	Cup Type (Deep)	219-3132	2-1/2	2.507	2.513	.455	.475	Cup Type (Deep)
219-3042	1-61/64	1.953	1.958	.709	.729	Cup Type (Deep)	219-3133	1-1/2	1.505	1.510	.303	.323	Cup Type (Deep)
219-3048	9/16	.570	.575	.240	.260	Cup Type (Deep)	219-3134	1-13/64	1.197	1.201	.394	.414	Cup Type (Deep)
219-3050	1-7/8	1.890	1.895	.427	.447	Cup Type (Deep)	219-3144	11/16	.693	.700	.240	.260	Cup Type (Deep)
219-3052	5/8	.630	.635	.240	.260	Cup Type (Deep)	219-3147	2 3/16	2.184	2.204	.333	.353	Cup Type (Deep)
219-3054	19/32	.590	.595	.271	.291	Cup Type (Deep)	219-3167	1-29/32	1.904	1.908	.587	.607	Cup Type (Deep)
219-3069	2-1/64	2.016	2.021	.580	.600	Cup Type (Deep)	219-3168	44.5mm	1.763	1.767	.523	.543	Cup Type (Deep)
219-3072	29/32	.910	.914	.380	.400	Cup Type (Deep)	219-3169	1/2	.509	.511	.248	.268	Cup Type (Deep)
219-3075	1-3/4	1.760	1.765	.353	.373	Cup Type (Deep)	219-3170	50mm	1.983	1.987	.285	.305	Cup Type (Deep)
219-3076	1.783	1.788	1.793	.350	.370	Cup Type (Deep)	219-3171	35mm	1.388	1.392	.384	.404	Cup Type (Deep)
219-3077	59/64	.920	.924	.303	.323	Cup Type (Deep)	219-3172	30mm	1.193	1.197	.310	.330	Cup Type (Deep)
219-3080	1-3/8	1.385	1.390	.490	.510	Cup Type (Deep)	219-3173	32mm	1.270	1.274	.390	.410	Cup Type (Deep)
219-3081	2-1/4	2.263	2.267	.803	.823	Cup Type (Deep)	219-3174	1-5/64	1.072	1.074	.270	.290	Cup Type (Deep)
219-3082	1-3/4	1.759	1.763	.560	.580	Cup Type (Deep)	219-3175	45mm	1.786	1.790	.290	.310	Cup Type (Deep)
219-3084	2-9/64	2.146	2.151	.590	.610	Cup Type (Deep)	219-3176	40mm	1.590	1.594	.449	.469	Cup Type (Deep)
219-3085	1-1/2	1.505	1.509	.530	.550	Cup Type (Deep)	219-3177	42.6mm	1.675	1.679	.368	.388	Cup Type (Deep)

## EXPANSION PLUG NUMERICAL SPECIFICATION

Part Number	Plug Size	Min. Plug Diameter	Max. Plug Diameter	Min. Plug Height	Max. Plug Height	Plug Type	Part Number	Plug Size	Min. Plug Diameter	Max. Plug Diameter	Min. Plug Height	Max. Plug Height	Plug Type
219-3178	16.5mm	.648	.652	.348	.368	Cup Type (Deep)	219-4009	1-3/4	-	-	-	-	EZ-Seal Type (Rubber)
219-3179	34.3mm	1.348	1.352	.490	.510	Cup Type (Deep)	219-4010	2	-	-	-	-	EZ-Seal Type (Rubber)
219-3180	1.882	1.881	1.885	.465	.485	Cup Type (Deep)	219-4011	2-1/8	-	-	-	-	EZ-Seal Type (Rubber)
219-3181	2.105	2.105	2.107	.350	.370	Cup Type (Deep)	219-4012	2-1/4	-	-	-	-	EZ-Seal Type (Rubber)
219-3183	1.632	1.632	1.635	.535	.555	Cup Type (Deep)	219-4013	1-7/8	-	-	-	-	EZ-Seal Type (Rubber)
219-3184	.567	.571	.575	.324	.344	Cup Type (Deep)	219-5016	1	1.012	1.016	.300	.340	Cup Type (Deep)
219-3185	50mm	1.983	1.987	.589	.609	Cup Type (Deep)	219-5025	1-1/8	1.136	1.140	.300	.340	Cup Type (Deep)
219-3186	41.5mm	1.641	1.645	.348	.368	Cup Type (Deep)	219-5029	7/8	.887	.891	.240	.280	Cup Type (Deep)
219-3187	36.5mm	1.443	1.453	.387	.407	Cup Type (Deep)	219-5038	3/4	.762	.765	.240	.280	Cup Type (Deep)
219-3188	25/64	.406	.410	.241	.261	Cup Type (Deep)	219-5050	1-7/8	1.889	1.893	.350	.390	Cup Type (Deep)
219-3189	5/16	.318	.322	.243	.263	Cup Type (Deep)	219-5066	2	2.015	2.019	.350	.390	Cup Type (Deep)
219-3190	21.44mm	.843	.847	.228	.248	Cup Type (Deep)	219-5075	1-3/4	1.763	1.768	.350	.390	Cup Type (Deep)
219-3191	26mm	1.028	1.032	.280	.340	Cup Type (Deep)	219-5110	1-1/4	1.262	1.266	.300	.340	Cup Type (Deep)
219-3193	12MM	.475	.475	.280	.340	Cup Type (Deep)	219-5126	1-5/8	1.645	1.649	.350	.390	Cup Type (Deep)
219-3194	2	1.993	2.013	.413	.417	Cup Type (Deep)	219-5132	2-1/2	2.510	2.514	.377	.397	Cup Type (Deep)
219-3195	2 5/32	2.155	2.160	.356	.360	Cup Type (Deep)	219-5133	1-1/2	1.510	1.514	.300	.340	Cup Type (Deep)
219-3196	42.3mm	1.661	1.665	.517	.521	Cup Type (Deep)	219-6003	3/4	.747	.753	-	-	Disc Type
219-3198	1-49/64	1.725	1.768	.406	.406	Cup Type (Deep)	219-6008	1	.997	1.003	-	-	Disc Type
219-3199	41mm	1.614	1.614	.470	.470	Cup Type (Deep)	219-6010	1-1/8	1.122	1.128	-	-	Disc Type
219-3200	13/16	.812	.812	.312	.312	Cup Type (Deep)	219-6011	1-1/4	1.247	1.253	-	-	Disc Type
219-3201	2.00	2.008	2.012	.436	.440	Cup Type (Deep)	219-6012	1-3/8	1.370	1.380	-	-	Disc Type
219-4001	3/4	-	-	-	-	EZ-Seal Type (Rubber)	219-6013	1-1/2	1.495	1.505	-	-	Disc Type
219-4002	7/8	-	-	-	-	EZ-Seal Type (Rubber)	219-6014	1-5/8	1.620	1.630	-	-	Disc Type
219-4003	1	-	-	-	-	EZ-Seal Type (Rubber)	219-6015	1-3/4	1.745	1.755	-	-	Disc Type
219-4004	1-1/8	-	-	-	-	EZ-Seal Type (Rubber)	219-6020	1-7/8	1.870	1.880	-	-	Disc Type
219-4005	1-1/4	-	-	-	-	EZ-Seal Type (Rubber)	219-6021	1-3/16	1.184	1.190	-	-	Disc Type
219-4006	1-3/8	-	-	-	-	EZ-Seal Type (Rubber)	219-6026	2	1.995	2.005	-	-	Disc Type
219-4007	1-1/2	-	-	-	-	EZ-Seal Type (Rubber)	219-6102	1-31/64	1.484	1.489	-	-	Disc Type
219-4008	1-5/8	-	-	-	-	EZ-Seal Type (Rubber)	219-6133	35mm	1.373	1.377	-	-	Disc Type
							219-7059	2-1/16	2.070	2.075	.328	.358	Cup Type (Shallow)
							219-7066	2	2.022	2.028	.396	.416	Cup Type (Shallow)
							219-7074	2-3/16	2.170	2.192	.341	.345	Cup Type (Shallow)
							219-7076	1-45/64	1.701	1.705	.271	.291	Cup Type (Shallow)
							219-7110	1-1/4	1.260	1.265	.303	.323	Cup Type (Shallow)
							219-7126	1-5/8	1.640	1.645	.363	.383	Cup Type (Shallow)
							219-7151	20mm	.796	.800	.227	.247	Cup Type (Shallow)



## EXPANSION PLUG NUMERICAL SPECIFICATION

Part Number	Plug Size	Min. Plug Diameter	Max. Plug Diameter	Min. Plug Height	Max. Plug Height	Plug Type	Part Number	Plug Size	Min. Plug Diameter	Max. Plug Diameter	Min. Plug Height	Max. Plug Height	Plug Type
219-7152	25mm	.994	.998	.270	.290	Cup Type (Shallow)	219-8171	35mm	1.391	1.395	.404	.424	Cup Type (Deep)
219-7153	18mm	.714	.718	.222	.242	Cup Type (Shallow)	219-8172	30mm	1.192	1.196	.321	.341	Cup Type (Deep)
219-7155	47mm	1.843	1.847	.317	.337	Cup Type (Shallow)	219-8173	32mm	1.271	1.275	.364	.384	Cup Type (Deep)
219-7158	25mm	.993	.997	.306	.326	Cup Type (Shallow)	219-8175	45mm	1.787	1.791	.464	.484	Cup Type (Deep)
219-7159	40mm	1.586	1.590	.278	.298	Cup Type (Shallow)	219-8176	40mm	1.591	1.595	.461	.481	Cup Type (Deep)
219-7168	28mm	1.113	1.117	.339	.343	Cup Type (Deep)	219-8179	34.3mm	1.346	1.350	.495	.505	Cup Type (Deep)
219-7183	1-41/64	1.630	1.650	.345	.355	Cup Type (Deep)	219-8185	50mm	1.983	1.987	.472	.476	Cup Type (Deep)
219-8016	1	1.010	1.012	.290	.330	Cup Type (Deep)	219-8187	36.5mm	1.443	1.453	.382	.402	Cup Type (Deep)
219-8017	1-7/32	1.227	1.232	.490	.510	Cup Type (Deep)	219-8190	21.4mm	.842	.846	.228	.232	Cup Type (Deep)
219-8025	1-1/8	1.130	1.135	.428	.448	Cup Type (Deep)	219-8196	42.3mm	1.661	1.665	.517	.521	Cup Type (Deep)
219-8029	7/8	.885	.890	.349	.369	Cup Type (Deep)	219-9440	1/4	.250	.250	.375	.375	Thread Type (Hex)
219-8030	1-1/2	1.505	1.510	.623	.627	Cup Type (Deep)	219-9441	1/8	.125	.125	.340	.340	Thread Type (Square)
219-8038	3/4	.740	.755	.230	.270	Cup Type (Deep)	219-9442	3/8	.375	.375	.460	.460	Thread Type (Hex)
219-8039	15/16	.950	.955	.330	.350	Cup Type (Deep)	219-9443	3/8	.375	.375	.375	.375	Thread Type (Hex)
219-8040	1-15/16	1.945	1.950	.677	.697	Cup Type (Deep)	219-9444	1/2	.500	.500	.500	.500	Thread Type (Hex)
219-8041	1-5/8	1.640	1.644	.470	.510	Cup Type (Deep)	219-9573	1/4	.250	.250	.373	.377	Thread Type (Hex)
219-8042	1-61/64	1.960	1.970	.615	.635	Cup Type (Deep)	219-9618	1/8 NPT	.125	.125	.300	.300	Thread Type (Hex)
219-8048	9/16	.570	.575	.240	.260	Cup Type (Deep)	219-9900	1/8	.125	.125	.375	.375	Thread Type (Slotted)
219-8050	1-7/8	1.890	1.895	.427	.447	Cup Type (Deep)	219-9901	1/4	.250	.250	.460	.460	Thread Type (Hex)
219-8069	2-1/64	2.016	2.021	.580	.600	Cup Type (Deep)	219-9902	1/4	.250	.250	.460	.460	Thread Type (Hex)
219-8075	1-3/4	1.760	1.765	.365	.385	Cup Type (Deep)	219-9903	1/4	.250	.250	.500	.500	Thread Type (Square)
219-8080	1-3/8	1.385	1.390	.302	.322	Cup Type (Deep)	219-9904	3/8	.360	.360	.312	.312	Thread Type (Hex)
219-8082	1-3/4	1.760	1.764	.540	.580	Cup Type (Deep)							
219-8085	1-1/2	1.506	1.510	.510	.550	Cup Type (Deep)							
219-8095	1/2	.525	.529	.303	.323	Cup Type (Deep)							
219-8133	1-1/2	1.506	1.508	.290	.330	Cup Type (Deep)							
219-8167	1-29/32	1.906	1.911	.263	.267	Cup Type (Deep)							
219-8170	50mm	1.986	1.990	.457	.477	Cup Type (Deep)							

## EXPANSION PLUG PROGRESSIVE SIZE CHART

Min. Plug Diameter	Max. Plug Diameter	Plug Size	Min. Plug Height	Max. Plug Height	Plug Type	Part Number	Min. Plug Diameter	Max. Plug Diameter	Plug Size	Min. Plug Height	Max. Plug Height	Plug Type	Part Number
.125	.125	1/8	.340	.340	Thread Type (Square)	219-9441	.509	.511	1/2	.248	.268	Cup Type (Deep)	219-3169
.125	.125	1/8	.375	.375	Thread Type (Slotted)	219-9900	.517	.522	33/64	.178	.198	Cup Type (Deep)	219-3087
.125	.125	1/8 NPT	.300	.300	Thread Type (Hex)	219-9618	.525	.529	1/2	.302	.322	Cup Type (Deep)	219-3095
.250	.250	1/4	.373	.377	Thread Type (Hex)	219-9573	.525	.529	1/2	.303	.323	Cup Type (Deep)	219-8095
.250	.250	1/4	.375	.375	Thread Type (Hex)	219-9440	.540	.545	.540	.178	.198	Cup Type (Shallow)	219-2098
.250	.250	1/4	.375	.375	Thread Type (Hex)	219-9440	.540	.545	.540	.240	.260	Cup Type (Deep)	219-3097
.250	.250	1/4	.460	.460	Thread Type (Hex)	219-9901	.557	.559	14.4mm	.255	.275	Cup Type (Shallow)	219-2163
.250	.250	1/4	.460	.460	Thread Type (Hex)	219-9901	.560	.565	9/16	-	-	Disc Type	219-1047
.250	.250	1/4	.460	.460	Thread Type (Hex)	219-9902	.565	.567	.561	.190	.210	Cup Type (Shallow)	219-2164
.250	.250	1/4	.460	.460	Thread Type (Hex)	219-9902	.570	.574	37/64	.193	.213	Cup Type (Deep)	219-3094
.250	.250	1/4	.500	.500	Thread Type (Square)	219-9903	.570	.575	9/16	.240	.260	Cup Type (Deep)	219-3048
.258	.263	.260	.125	.145	Cup Type (Shallow)	219-2166	.570	.575	9/16	.240	.260	Cup Type (Deep)	219-8048
.270	.275	.270	.190	.210	Cup Type (Deep)	219-3105	.571	.575	.567	.324	.344	Cup Type (Deep)	219-3184
.312	.315	5/16	.287	.307	Cup Type (Deep)	219-3128	.589	.594	15mm	.208	.228	Cup Type (Shallow)	219-2189
.318	.322	5/16	.243	.263	Cup Type (Deep)	219-3189	.590	.595	19/32	.271	.291	Cup Type (Deep)	219-3054
.320	.321	.320	.195	.215	Cup Type (Shallow)	219-2162	.622	.628	5/8	-	-	Disc Type	219-1002
.339	.342	.339	.225	.240	Cup Type (Deep)	219-3101	.623	.628	16mm	-	-	Disc Type	219-1136
.360	.360	3/8	.312	.312	Thread Type (Hex)	219-9904	.630	.635	5/8	.240	.260	Cup Type (Deep)	219-3052
.375	.375	3/8	.375	.375	Thread Type (Hex)	219-9443	.633	.638	5/8	.171	.175	Cup Type (Shallow)	219-2169
.375	.375	3/8	.375	.375	Thread Type (Hex)	219-9443	.637	.639	.637	.225	.245	Cup Type (Shallow)	219-2167
.375	.375	3/8	.460	.460	Thread Type (Hex)	219-9442	.648	.652	16.5mm	.348	.368	Cup Type (Deep)	219-3178
.382	.383	3/8	.155	.175	Cup Type (Shallow)	219-2185	.666	.668	.666	.230	.250	Cup Type (Shallow)	219-2188
.406	.410	25/64	.241	.261	Cup Type (Deep)	219-3188	.684	.690	11/16	-	-	Disc Type	219-1045
.422	.447	7/16	.146	.166	Cup Type (Deep)	219-3093	.693	.700	11/16	.240	.260	Cup Type (Deep)	219-3144
.435	.440	7/16	-	-	Disc Type	219-1037	.697	.704	45/64	.203	.207	Cup Type (Shallow)	219-2197
.439	.444	11mm	.181	.201	Cup Type (Shallow)	219-2156	.706	.712	18mm	-	-	Disc Type	219-1135
.439	.452	29/64	.168	.208	Cup Type (Deep)	219-3088	.714	.718	18mm	.222	.242	Cup Type (Shallow)	219-7153
.453	.458	12mm	.200	.220	Cup Type (Shallow)	219-2160	.715	.720	18mm	.225	.245	Cup Type (Shallow)	219-2153
.475	.475	12MM	.280	.340	Cup Type (Deep)	219-3193	.740	.755	3/4	.230	.270	Cup Type (Deep)	219-8038
.479	.481	.475	.190	.210	Cup Type (Shallow)	219-2165	.747	.753	3/4	-	-	Disc Type	219-1003
.498	.502	1/2	-	-	Disc Type	219-1046	.747	.753	3/4	-	-	Disc Type	219-6003
.500	.500	1/2	.500	.500	Thread Type (Hex)	219-9444	.760	.765	3/4	.255	.275	Cup Type (Deep)	219-3038
					Cup Type (Shallow)	219-2165	.762	.765	3/4	.240	.280	Cup Type (Deep)	219-5038
					Disc Type	219-1046	.794	.800	20mm	.228	.248	Cup Type (Shallow)	219-2151
					Thread Type (Hex)	219-9444	.795	.801	21mm	-	-	Disc Type	219-1132
							.796	.800	20mm	.227	.247	Cup Type (Shallow)	219-7151

## EXPANSION PLUG PROGRESSIVE SIZE CHART

Min. Plug Diameter	Max. Plug Diameter	Plug Size	Min. Plug Height	Max. Plug Height	Plug Type	Part Number	Min. Plug Diameter	Max. Plug Diameter	Plug Size	Min. Plug Height	Max. Plug Height	Plug Type	Part Number
.796	.801	20mm	.308	.328	Cup Type (Shallow)	219-2180	<b>1.184</b>	1.190	1-3/16	-	-	Disc Type	219-1021
.812	.812	13/16	.312	.312	Cup Type (Deep)	219-3200	<b>1.184</b>	1.190	1-3/16	-	-	Disc Type	219-6021
.823	.827	13/16	.232	.242	Cup Type (Shallow)	219-2190	<b>1.192</b>	1.196	30mm	.321	.341	Cup Type (Deep)	219-8172
.842	.846	21.4mm	.228	.232	Cup Type (Deep)	219-8190	<b>1.193</b>	1.197	30mm	.310	.330	Cup Type (Deep)	219-3172
.843	.847	21.4mm	.228	.248	Cup Type (Deep)	219-3190	<b>1.197</b>	1.201	1-13/64	.394	.414	Cup Type (Deep)	219-3134
.872	.878	7/8	-	-	Disc Type	219-1006	<b>1.225</b>	1.230	1-7/32	.209	.229	Cup Type (Deep)	219-3017
.885	.890	7/8	.303	.323	Cup Type (Deep)	219-3029	<b>1.227</b>	1.232	1-7/32	.490	.510	Cup Type (Deep)	219-8017
.885	.890	7/8	.349	.369	Cup Type (Deep)	219-8029	<b>1.247</b>	1.253	1-1/4	-	-	Disc Type	219-1011
.887	.891	7/8	.240	.280	Cup Type (Deep)	219-5029	<b>1.247</b>	1.253	1-1/4	-	-	Disc Type	219-6011
.910	.914	29/32	.380	.400	Cup Type (Deep)	219-3072	<b>1.255</b>	1.260	1-1/4	.334	.354	Cup Type (Deep)	219-3099
.920	.924	59/64	.303	.323	Cup Type (Deep)	219-3077	<b>1.260</b>	1.265	1-1/4	.303	.323	Cup Type (Shallow)	219-2110
.932	.940	15/16	-	-	Disc Type	219-1007	<b>1.260</b>	1.265	1-1/4	.303	.323	Cup Type (Shallow)	219-7110
.940	.946	24mm	-	-	Disc Type	219-1131	<b>1.262</b>	1.266	1-1/4	.300	.340	Cup Type (Deep)	219-5110
.942	.947	15/16	.365	.385	Cup Type (Deep)	219-3039	<b>1.270</b>	1.274	32mm	.390	.410	Cup Type (Deep)	219-3173
.950	.955	15/16	.330	.350	Cup Type (Deep)	219-8039	<b>1.271</b>	1.275	32mm	.364	.384	Cup Type (Deep)	219-8173
.954	.956	24mm	.275	.295	Cup Type (Shallow)	219-2187	<b>1.307</b>	1.317	1-5/16	-	-	Disc Type	219-1023
.983	.988	25mm	.315	.335	Cup Type (Shallow)	219-2158	<b>1.320</b>	1.325	1-21/64	.271	.291	Cup Type (Shallow)	219-2127
.993	.997	25mm	.306	.326	Cup Type (Shallow)	219-7158	<b>1.335</b>	1.337	1.335	.280	.300	Cup Type (Shallow)	219-2186
.994	.998	25mm	.270	.290	Cup Type (Shallow)	219-7152	<b>1.346</b>	1.350	34.3mm	.495	.505	Cup Type (Deep)	219-8179
.994	.999	25mm	.270	.290	Cup Type (Shallow)	219-2152	<b>1.348</b>	1.352	34.3mm	.490	.510	Cup Type (Deep)	219-3179
.997	1.003	1	-	-	Disc Type	219-1008	<b>1.370</b>	1.380	1-3/8	-	-	Disc Type	219-1012
.997	1.003	1	-	-	Disc Type	219-6008	<b>1.370</b>	1.380	1-3/8	-	-	Disc Type	219-6012
1.010	1.012	1	.290	.330	Cup Type (Deep)	219-8016	<b>1.373</b>	1.377	35mm	-	-	Disc Type	219-6133
1.012	1.015	1	.271	.291	Cup Type (Deep)	219-3016	<b>1.373</b>	1.378	35mm	-	-	Disc Type	219-1133
1.012	1.016	1	.300	.340	Cup Type (Deep)	219-5016	<b>1.385</b>	1.390	1-3/8	.302	.322	Cup Type (Deep)	219-8080
1.028	1.032	26mm	-	-	Disc Type	219-3191	<b>1.385</b>	1.390	1-3/8	.490	.510	Cup Type (Deep)	219-3080
1.059	1.065	1-1/16	-	-	Disc Type	219-1009	<b>1.386</b>	1.390	1-3/8	.337	.357	Cup Type (Shallow)	219-2193
1.072	1.074	1-5/64	.270	.290	Cup Type (Deep)	219-3174	<b>1.388</b>	1.392	35mm	.384	.404	Cup Type (Deep)	219-3171
1.074	1.079	1-1/16	.631	.651	Cup Type (Deep)	219-3086	<b>1.391</b>	1.395	35mm	.404	.424	Cup Type (Deep)	219-8171
1.100	1.105	28mm	.331	.351	Cup Type (Shallow)	219-2168	<b>1.443</b>	1.453	36.5mm	.382	.402	Cup Type (Deep)	219-8187
1.113	1.117	28mm	.339	.343	Cup Type (Deep)	219-7168	<b>1.443</b>	1.453	36.5mm	.387	.407	Cup Type (Deep)	219-3187
1.122	1.128	1-1/8	-	-	Disc Type	219-1010	<b>1.452</b>	1.147	1-7/16	.418	.438	Cup Type (Shallow)	219-2182
1.122	1.128	1-1/8	-	-	Disc Type	219-6010	<b>1.484</b>	1.489	1-31/64	-	-	Disc Type	219-1102
1.130	1.135	1-1/8	.428	.448	Cup Type (Deep)	219-3025	<b>1.484</b>	1.489	1-31/64	-	-	Disc Type	219-6102
1.130	1.135	1-1/8	.428	.448	Cup Type (Deep)	219-8025	<b>1.495</b>	1.505	1-1/2	-	-	Disc Type	219-1013
1.130	1.135	1-1/8	.428	.448	Cup Type (Deep)	219-8025	<b>1.495</b>	1.505	1-1/2	-	-	Disc Type	219-6013
1.136	1.140	1-1/8	.300	.340	Cup Type (Deep)	219-5025	<b>1.505</b>	1.509	1-1/2	.530	.550	Cup Type (Deep)	219-3085
							<b>1.505</b>	1.510	1-1/2	.303	.323	Cup Type (Deep)	219-3133

## EXPANSION PLUG PROGRESSIVE SIZE CHART

Min. Plug Diameter	Max. Plug Diameter	Plug Size	Min. Plug Height	Max. Plug Height	Plug Type	Part Number	Min. Plug Diameter	Max. Plug Diameter	Plug Size	Min. Plug Height	Max. Plug Height	Plug Type	Part Number
1.505	1.510	1-1/2	.623	.627	Cup Type (Deep)	219-8030	1.760	1.765	1-3/4	.240	.250	Cup Type (Shallow)	219-2057
1.506	1.508	1-1/2	.290	.330	Cup Type (Deep)	219-8133	1.760	1.765	1-3/4	.353	.373	Cup Type (Deep)	219-3075
1.506	1.510	1-1/2	.510	.550	Cup Type (Deep)	219-8085	1.760	1.765	1-3/4	.365	.385	Cup Type (Deep)	219-8075
1.506	1.511	38mm	.323	.343	Cup Type (Shallow)	219-2184	1.763	1.767	44.5mm	.523	.543	Cup Type (Deep)	219-3168
1.510	1.514	1-1/2	.300	.340	Cup Type (Deep)	219-5133	1.763	1.768	1-3/4	.350	.390	Cup Type (Deep)	219-5075
1.518	1.522	1-1/2	.365	.385	Cup Type (Deep)	219-3030	1.786	1.790	45mm	.290	.310	Cup Type (Deep)	219-3175
1.569	1.574	1-9/16	.295	.315	Cup Type (Shallow)	219-2181	1.787	1.791	45mm	.464	.484	Cup Type (Deep)	219-8175
1.570	1.575	40mm	-	-	Disc Type	219-1134	1.788	1.793	1.783	.350	.370	Cup Type (Deep)	219-3076
1.580	1.585	40mm	.273	.293	Cup Type (Shallow)	219-2159	1.800	1.805	1-51/64	.240	.260	Cup Type (Shallow)	219-2096
1.586	1.590	40mm	.278	.298	Cup Type (Shallow)	219-7159	1.824	1.826	1-53/64	.340	.360	Cup Type (Shallow)	219-2173
1.590	1.594	40mm	.449	.469	Cup Type (Deep)	219-3176	1.840	1.845	47mm	.280	.300	Cup Type (Shallow)	219-2155
1.591	1.595	40mm	.461	.481	Cup Type (Deep)	219-8176	1.843	1.847	47mm	.317	.337	Cup Type (Shallow)	219-7155
1.614	1.614	41mm	.470	.470	Cup Type (Deep)	219-3199	1.870	1.880	1-7/8	-	-	Disc Type	219-1020
1.620	1.630	1-5/8	-	-	Disc Type	219-1014	1.870	1.880	1-7/8	-	-	Disc Type	219-6020
1.620	1.630	1-5/8	-	-	Disc Type	219-6014	1.881	1.885	1.882	.465	.485	Cup Type (Deep)	219-3180
1.630	1.650	1-41/64	.345	.355	Cup Type (Deep)	219-7183	1.889	1.893	1-7/8	.350	.390	Cup Type (Deep)	219-5050
1.632	1.635	1.632	.535	.555	Cup Type (Deep)	219-3183	1.890	1.895	1-7/8	.427	.447	Cup Type (Deep)	219-3050
1.635	1.640	1-5/8	.355	.375	Cup Type (Shallow)	219-2126	1.890	1.895	1-7/8	.427	.447	Cup Type (Deep)	219-8050
1.639	1.643	1-5/8	.490	.510	Cup Type (Deep)	219-3041	1.893	1.898	1.885	.260	.280	Cup Type (Shallow)	219-2161
1.640	1.644	1-5/8	.470	.510	Cup Type (Deep)	219-8041	1.904	1.908	1-29/32	.587	.607	Cup Type (Deep)	219-3167
1.640	1.645	1-5/8	.363	.383	Cup Type (Shallow)	219-7126	1.906	1.911	1-29/32	.263	.267	Cup Type (Deep)	219-8167
1.640	1.645	1-41/64	.340	.360	Cup Type (Shallow)	219-2183	1.920	1.922	1-59/64	.225	.245	Cup Type (Shallow)	219-2172
1.641	1.645	41.5mm	.348	.368	Cup Type (Deep)	219-3186	1.932	1.942	1-15/16	-	-	Disc Type	219-1043
1.645	1.649	1-5/8	.350	.390	Cup Type (Deep)	219-5126	1.945	1.950	1-15/16	.677	.697	Cup Type (Deep)	219-3040
1.661	1.665	42.3mm	.517	.521	Cup Type (Deep)	219-3196	1.945	1.950	1-15/16	.677	.697	Cup Type (Deep)	219-8040
1.661	1.665	42.3mm	.517	.521	Cup Type (Deep)	219-8196	1.948	1.960	1 61/64	.344	.346	Cup Type (Shallow)	219-2196
1.675	1.679	42.6mm	.368	.388	Cup Type (Deep)	219-3177	1.953	1.958	1-61/64	.709	.729	Cup Type (Deep)	219-3042
1.700	1.705	1-45/64	.271	.291	Cup Type (Shallow)	219-2076	1.960	1.970	1-61/64	.615	.635	Cup Type (Deep)	219-8042
1.701	1.705	1-45/64	.271	.291	Cup Type (Shallow)	219-7076	1.975	1.980	1-31/32	.209	.229	Cup Type (Shallow)	219-2058
1.725	1.768	1-49/64	.406	.406	Cup Type (Deep)	219-3198	1.983	1.987	50mm	.285	.305	Cup Type (Deep)	219-3170
1.729	1.739	1-47/64	-	-	Disc Type	219-1103	1.983	1.987	50mm	.472	.476	Cup Type (Deep)	219-8185
1.745	1.755	1-3/4	-	-	Disc Type	219-1015	1.983	1.987	50mm	.589	.609	Cup Type (Deep)	219-3185
1.745	1.755	1-3/4	-	-	Disc Type	219-6015	1.983	1.987	50mm	.589	.609	Cup Type (Deep)	219-3185
1.759	1.763	1-3/4	.560	.580	Cup Type (Deep)	219-3082	1.986	1.990	50mm	.457	.477	Cup Type (Deep)	219-8170
1.760	1.764	1-3/4	.540	.580	Cup Type (Deep)	219-8082							

## EXPANSION PLUG PROGRESSIVE SIZE CHART

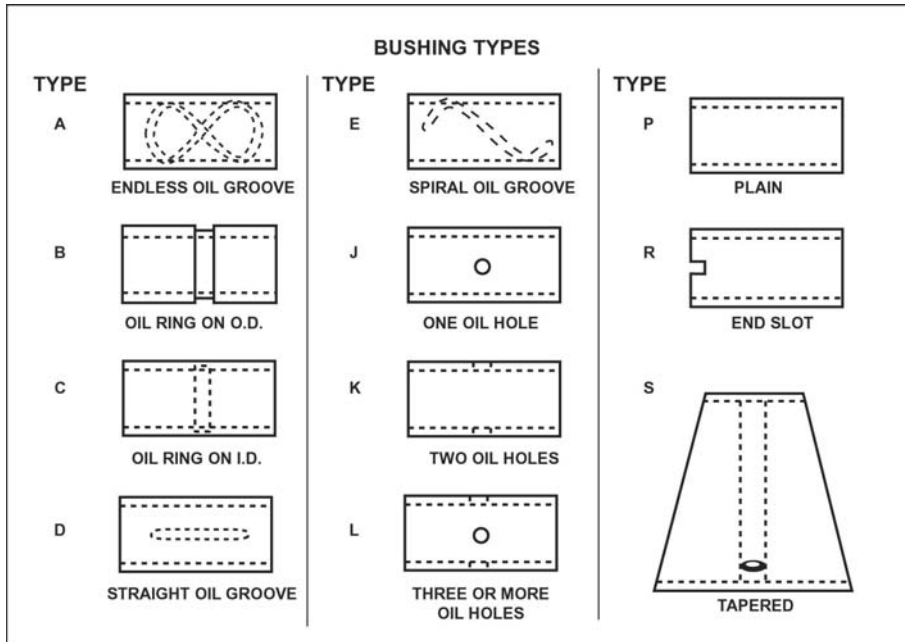
Min. Plug Diameter	Max. Plug Diameter	Plug Size	Min. Plug Height	Max. Plug Height	Plug Type	Part Number	Min. Plug Diameter	Max. Plug Diameter	Plug Size	Min. Plug Height	Max. Plug Height	Plug Type	Part Number
1.993	2.013	2	.413	.417	Cup Type (Deep)	219-3194	2.262	2.266	2.262	.345	.365	Cup Type (Deep)	219-3090
1.995	2.005	2	-	-	Disc Type	219-1026	2.263	2.267	2-1/4	.803	.823	Cup Type (Deep)	219-3081
1.995	2.005	2	-	-	Disc Type	219-6026	2.275	2.285	2.28	-	-	Disc Type	219-1137
2.008	2.012	2.00	.436	.440	Cup Type (Deep)	219-3201	2.394	2.398	2.386	.300	.320	Cup Type (Deep)	219-3092
2.015	2.019	2	.350	.390	Cup Type (Deep)	219-5066	2.507	2.513	2-1/2	.455	.475	Cup Type (Deep)	219-3132
2.015	2.020	2-1/64	.230	.250	Cup Type (Shallow)	219-2083	2.510	2.514	2-1/2	.377	.397	Cup Type (Deep)	219-5132
2.016	2.021	2-1/64	.580	.600	Cup Type (Deep)	219-3069	2.510	2.514	2-1/2	.401	.421	Cup Type (Shallow)	219-2194
2.016	2.021	2-1/64	.580	.600	Cup Type (Deep)	219-8069	2.573	2.577	2.573	.291	.311	Cup Type (Deep)	219-3089
2.022	2.028	2	.396	.416	Cup Type (Shallow)	219-2066	-	-	1	-	-	EZ-Seal Type (Rubber)	219-4003
2.022	2.028	2	.396	.416	Cup Type (Shallow)	219-7066	-	-	1-1/2	-	-	EZ-Seal Type (Rubber)	219-4007
2.057	2.067	2-1/16	-	-	Disc Type	219-1068	-	-	1-1/4	-	-	EZ-Seal Type (Rubber)	219-4005
2.065	2.070	2-1/16	.500	.520	Cup Type (Deep)	219-3112	-	-	1-1/4	-	-	EZ-Seal Type (Rubber)	219-4004
2.070	2.075	2-1/16	.328	.358	Cup Type (Shallow)	219-2059	-	-	1-1/8	-	-	EZ-Seal Type (Rubber)	219-4009
2.070	2.075	2-1/16	.328	.358	Cup Type (Shallow)	219-7059	-	-	1-3/4	-	-	EZ-Seal Type (Rubber)	219-4006
2.095	2.100	2-3/32	.600	.620	Cup Type (Deep)	219-3131	-	-	1-3/8	-	-	EZ-Seal Type (Rubber)	219-4008
2.100	2.105	2-3/32	.260	.280	Cup Type (Shallow)	219-2150	-	-	1-7/8	-	-	EZ-Seal Type (Rubber)	219-4013
2.100	2.110	2.105	-	-	Disc Type	219-1129	-	-	2	-	-	EZ-Seal Type (Rubber)	219-4010
2.105	2.107	2.105	.350	.370	Cup Type (Deep)	219-3181	-	-	2-1/4	-	-	EZ-Seal Type (Rubber)	219-4012
2.108	2.110	2-7/64	.286	.296	Cup Type (Shallow)	219-2078	-	-	2-1/8	-	-	EZ-Seal Type (Rubber)	219-4011
2.120	2.130	2-1/8	-	-	Disc Type	219-1044	-	-	3/4	-	-	EZ-Seal Type (Rubber)	219-4001
2.134	2.136	2-9/64	.350	.370	Cup Type (Shallow)	219-2170	-	-	7/8	-	-	EZ-Seal Type (Rubber)	219-4002
2.146	2.151	2-9/64	.590	.610	Cup Type (Deep)	219-3084	-	-	-	-	-	-	-
2.151	2.156	2-5/32	.318	.338	Cup Type (Shallow)	219-2071	-	-	-	-	-	-	-
2.155	2.160	2 5/32	.356	.360	Cup Type (Deep)	219-3195	-	-	-	-	-	-	-
2.170	2.192	2-3/16	.341	.345	Cup Type (Shallow)	219-7074	-	-	-	-	-	-	-
2.184	2.204	2 3/16	.333	.353	Cup Type (Deep)	219-3147	-	-	-	-	-	-	-
2.190	2.195	2-3/16	.334	.354	Cup Type (Shallow)	219-2074	-	-	-	-	-	-	-
2.218	2.223	2-7/32	.295	.315	Cup Type (Shallow)	219-2154	-	-	-	-	-	-	-
2.245	2.255	2-1/4	-	-	Disc Type	219-1022	-	-	-	-	-	-	-
2.262	2.264	2-1/4	.340	.360	Cup Type (Shallow)	219-2157	-	-	-	-	-	-	-

## PISTON PINS



Part Number	Diameter	Length	Style	Part Number	Diameter	Length	Style
223-1356.001	.8607	2.750	A	223-1765.001	1.0953	3.565	A
223-1356.003	.8620	2.810	A	223-1765.003	1.0968	3.565	A
223-1360.001	.8605	2.865	A	223-1768.001	1.0642	2.875	A
223-1360.003	.8620	2.865	A	223-1774.001	.9025	2.965	A
223-1550.005	.8794	2.691	A	223-1774.003	.9040	2.965	A
223-1569.003	.8693	3.213	A	223-1800.001	.9412	3.052	A
223-1579.003	.9223	2.488	A	223-1801.001	.9765	3.165	A
223-1627.005	.8183	2.875	A	223-1810	.9897	2.928	A
223-1634	1.4999	3.612	A	223-1810.001	.9912	2.928	A
223-1645.003	.8620	2.810	A	223-1810.003	.9927	2.928	A
223-1646.001	.7517	2.838	A	223-1822	1.7490	4.504	A
223-1646.003	.7532	2.838	A	223-1823	1.7490	4.504	A
223-1659.003	1.1118	3.797	A	223-1824	1.5000	3.625	S
223-1680.003	.9151	3.171	A	223-1826	2.0000	4.725	S
223-1681.001	.9136	3.020	A	223-1828	1.8122	3.791	A
223-1681.003	.9151	3.020	A	223-1829	1.5000	3.735	A
223-1701.003	.9338	3.187	A	223-1830	2.0000	4.405	A
223-1707.001	.9854	2.995	A	223-1831	2.3899	4.726	A
223-1707.003	.9869	2.995	A	223-1832	2.4490	5.135	A
223-1710.003	.7528	2.542	A	223-1833	1.9997	4.525	A
223-1713.005	1.2545	2.749	A	223-1834	1.9988	4.000	A
223-1747.003	.5462	1.922	S	223-1835	1.6998	3.730	A
223-1749	.9271	3.003	A	223-1836	1.4999	3.207	A
223-1749.001	.9286	3.003	A	223-1837	1.2495	3.2495	A
223-1749.003	.9301	3.003	A	223-1838	1.9998	4.292	A
223-1751.001	1.0013	3.520	A	223-1839	1.9998	3.966	A
223-1757.001	.9765	3.165	A	223-1840	2.7550	5.422	A
223-1757.003	.978	3.165	A	223-1841	2.9940	8.338	A
223-1763.001	.9818	3.250	A	223-1842	1.9989	4.344	A
223-1763.003	.9833	3.250	A	223-1843	1.5748	2.977	A

# PISTON PIN BUSHINGS PROGRESSIVE SIZE CHART



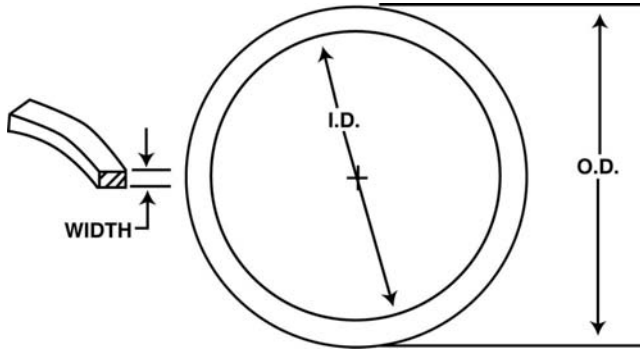
Part Number	Min. OD	Max. OD	Max. Length	Max. Wall Thickness	Part Number	Min. OD	Max. OD	Max. Length	Max. Wall Thickness
223-3349	.9130	.9140	.0325	1.1250	223-3545	2.2500	2.2500	.1400	2.2100
223-3361	1.1600	1.1615	.0330	1.3225	223-3546	.9730	.9750	.0411	1.2500
223-3417	1.3600	1.3660	.2480	2.9700	223-3547	.9843	.9851	.1190	0.9843
223-3429	1.0625	1.0635	.2230	1.1250	223-3548			.0880	3.2350
223-3443		1.4085	.1115	1.5250	223-3549	1.0008		.1248	1.0240
223-3451	.8115	.8125	.0360	1.3220	223-3550			.1150	1.0100
223-3458		.9080	.0375	1.3220	223-3551		.8661	.1000	0.9606
223-3461	1.2175	1.2190	.6050	1.5410	223-3552	.9437	.9449	.0900	0.9213
223-3462	1.7560	1.7595	.1330	0.8175	223-3554	1.1022	1.1024	.0590	1.3386
223-3466	.7550	.7580	.0410	0.8850	223-3555	1.1950	1.1965	.0620	0.9750
223-3469	.9305	.9315	.0330	1.2650	223-3558	1.3750	1.3755	.0750	1.4110
223-3471	.8700	.8735	.0710	1.0100	223-3559	1.6250	1.6255	.0750	1.1500
223-3474	.9065	.9105	.0320	1.1250	223-3561	1.3125	1.3130	.0740	1.8000
223-3477	.9861	.9886	.0405	1.2290	223-3563	2.0015	2.0021	.1420	1.7600
223-3484	1.0370	1.0390	.0320	1.1400	223-3564	1.6250	1.6255	.1400	1.5280
223-3488	1.6870	1.6875	.0405	1.8540	223-3565	1.7500	1.7505	.1450	1.5700
223-3489	1.8950	1.8970	.1480	2.0000	223-3566	1.2500	1.2505	.0660	1.3220
223-3496	2.2500	2.2505	.1400	1.1040	223-3568	2.1825	2.1830	.1110	1.8900
223-3501	1.0360	1.0380	.0365	1.2500	223-3569	1.6295	1.6300	.0770	1.3100
223-3502	1.4060	1.4075	.0610	1.3960	223-3570	2.6755	2.6760	1.2500	2.2600
223-3503	.7622	.7632	.0320	1.0630	223-3571	2.0405	2.0410	.1260	1.6970
223-3504	1.3040	1.3060	.0480	1.5400	223-3572	1.6255	1.6260	.0750	1.4000
223-3505	.6019	.6039	.0365	0.8230	223-3574	1.6295	1.6300	.0770	1.4500
223-3507	1.1270	1.1275	.0730	1.2560	223-3575	1.9815	1.9820	.1000	1.7950
223-3512	1.3125	1.3135	.0460	1.2920	223-3576	1.3030	1.3045	.0580	1.0010
223-3514	1.3125	1.3130	.0450	0.5570	223-3577	2.1855	2.1860	.1060	1.8850
223-3515	.9730	.9750	.0365	1.2000	223-3578	1.8250	1.8255	.0750	1.4200
223-3516	1.1810	1.1845	.0450	1.2500	223-3579	1.6244	1.6256	.1520	0.8550
223-3517	1.3698	1.3723	.0680	1.2600	223-3580	2.6155	2.6160	.1340	2.0720
223-3520	1.3075	1.3110	.1320	1.5000	223-3581	.9850		.0604	1.1030
223-3521	1.3700	1.3740	.0670	1.5100	223-3583	1.2375	1.2380	.1580	1.0780
223-3522	1.6250	1.6255	.0670	1.5100	223-3584	1.1450	1.1460	.1244	0.9950
223-3528	1.4845	1.4850	.0730	1.3770	223-3585	2.1845	2.1850	.1100	1.5600
223-3530			.0938	1.2400	223-3586	2.1855	2.1860	.1060	1.8850
223-3531			.0670		223-3587	2.4365	2.4375	.2040	0.8550
223-3544	2.1250	2.1255	.0695	1.6850	223-3590			.2085	1.5000

## PISTON PIN BUSHINGS PROGRESSIVE SIZE CHART

Part Number	Min. OD	Max. OD	Max. Length	Max. Wall Thickness	Part Number	Min. OD	Max. OD	Max. Length	Max. Wall Thickness
223-3591	1.3080	1.3105	.0630	1.6250	223-3628	1.6290	1.6295	.0775	1.3020
223-3593			.0840	1.3600	223-3629	3.7539	3.7545	.1380	1.5940
223-3594	1.3757	1.3762	.8500	1.0630	223-3630	2.3756	2.3762	.0740	1.8000
223-3595	1.7250	1.7255	.0635	1.4000	223-3631	3.2435	3.2475	.1400	1.5720
223-3596			.1235	1.5700	223-3632	2.7440	2.7480	.2520	1.3530
223-3597	1.0830	1.0840	.0622	0.9200	223-3633	1.8125	1.8130	.0950	1.5100
223-3598	1.0360	1.0380	.0411	1.1900	223-3634	1.6850	1.6900	.1060	0.7100
223-3605	.9130	.9140	.0425	1.1250	223-3636	1.6250		.0720	1.6098
223-3606	1.0365	1.0380	.0450	1.2500	223-3637	1.4972	1.4982	.0996	1.4960
223-3607	1.0370	1.0390	.0430	1.1400	223-3638	1.1417	1.1427	.0600	1.1811
223-3608	.9730	.9750	.0365	1.2500	223-3639	1.2187	1.2204	.0820	0.9551
223-3609	.9730	.9750	.0460	1.2000	223-3640	1.5318	1.5323	.0870	1.3360
223-3610	.9458		.0411	2.8800	223-3641	1.6562	1.6568	.0830	1.3360
223-3611	.9450		.0407	0.9760	223-3642	1.9287	1.9296	.0890	1.7820
223-3612	1.1820		.0602	1.2200	223-3643	1.8250	1.8255	.0750	1.6110
223-3615	1.4961	1.4971	.0602	1.4960	223-3644	1.6924	1.6934	.0690	1.5100
223-3616	.0709		.0452	0.0866	223-3645	1.0294	1.0304	.0800	0.9900
223-3617	1.1417	1.1419	.0604	1.2600	223-3646			.1260	0.8500
223-3618	1.0140	1.0150	.0490	0.8500	223-3647			.1100	0.8420
223-3620	.8664	.8668	.0525	0.9350	223-3648			.1008	0.8563
223-3621	.9134	.9140	.0365	1.1250	223-3649		.8460	.0795	0.9606
223-3622	1.6005	1.6010	.1225	0.7550	223-3651			.1300	0.8450
223-3623	2.0620	2.0625	1.0600	1.0100	223-3652	1.4320	1.4330	.0760	1.1520
223-3624					223-3653	.9469	.9484	.0406	1.0532
223-3625	1.6045	1.6050	.0595	1.4050	223-3654	.9432	.9451	.0533	0.8750
223-3626	1.7250	1.7255	.0595	1.4050	223-3658	1.3386		.0602	1.2992
223-3627	1.7250	1.7255	.0635	1.2750					



## CYLINDER SLEEVE INSERT RINGS



O.D.	I.D.	Width	Part Number	O.D.	I.D.	Width	Part Number
5.046	4.642	.176	223-8105	5.046	4.662	.172	223-8111
5.046	4.642	.180	223-8100	5.046	4.662	.180	223-8107
5.046	4.642	.182	223-8101	5.046	4.662	.183	223-8109
5.046	4.642	.183	223-8102	5.554	5.365	.119	223-8137
5.046	4.642	.185	223-8103	5.554	5.365	.121	223-8135

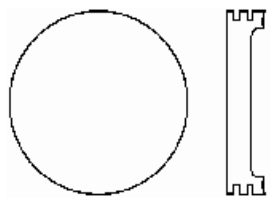
## Cylinder Block Repair Bushings

O.D.	I.D.	Width	Part Number	O.D.	I.D.	Width	Part Number
5.805	5.433	.650	223-3599	6.756	6.275	.601	223-8133

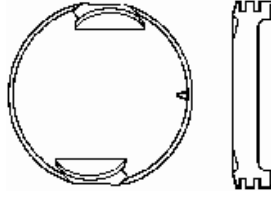
## Cylinder Block Shims

O.D.	I.D.	Width	Part Number	O.D.	I.D.	Width	Part Number
6.562	6.360	.018	223-8013	6.562	6.360	.022	223-8011
6.562	6.360	.021	223-8012				

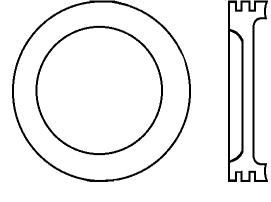
## Head Configuration Reference Diagrams



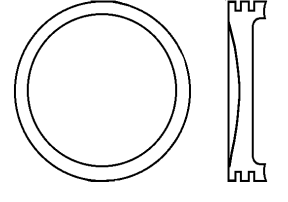
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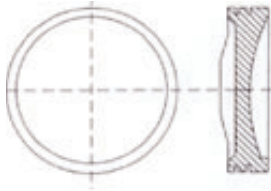
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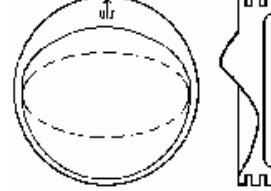
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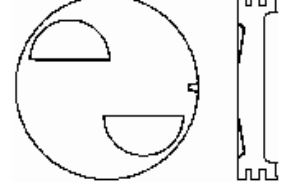
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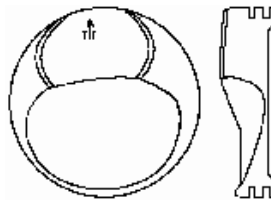
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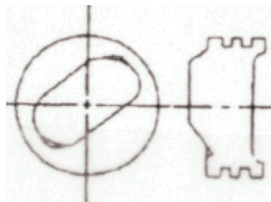
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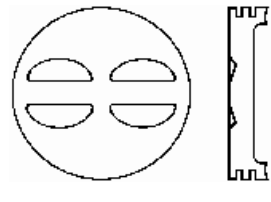
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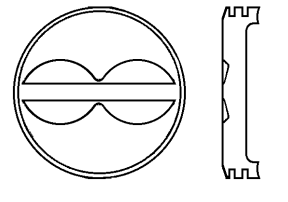
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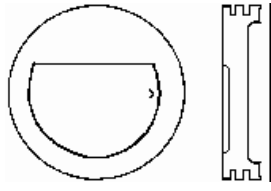
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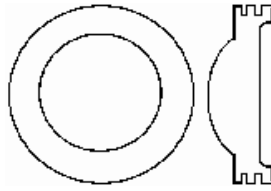
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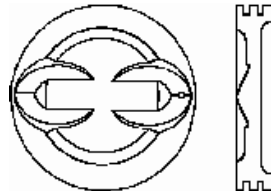
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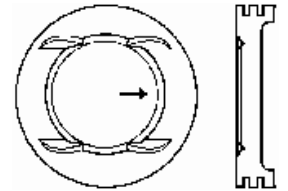
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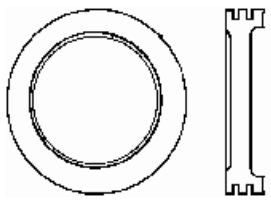
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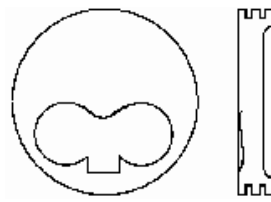
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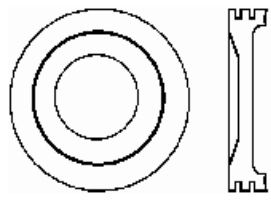
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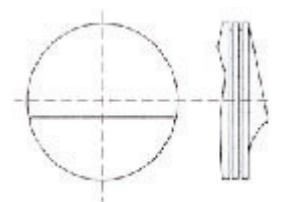
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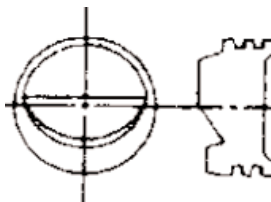
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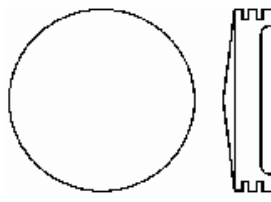
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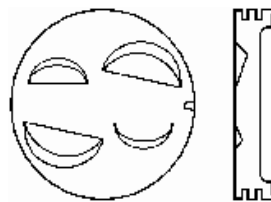
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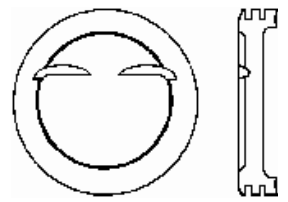
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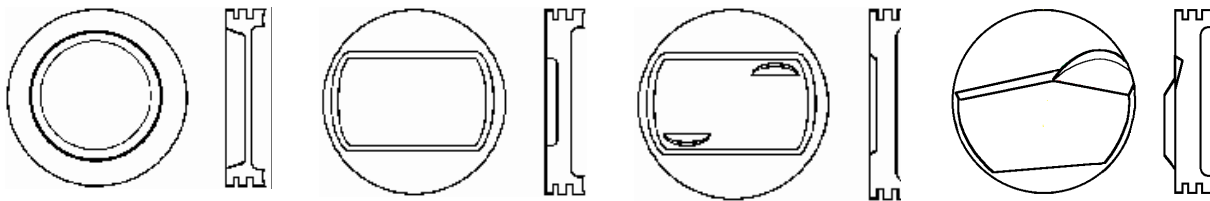


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#24

## Head Configuration Reference Diagrams

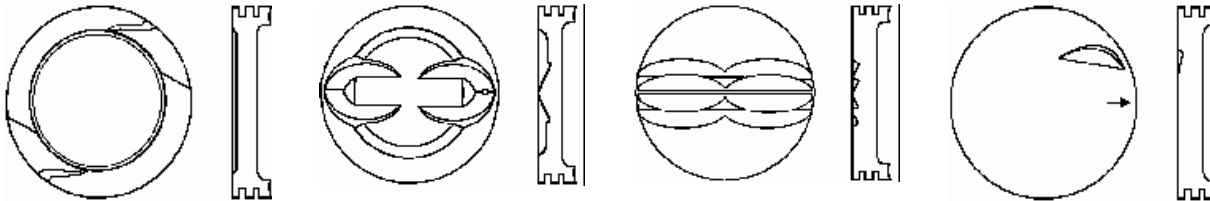


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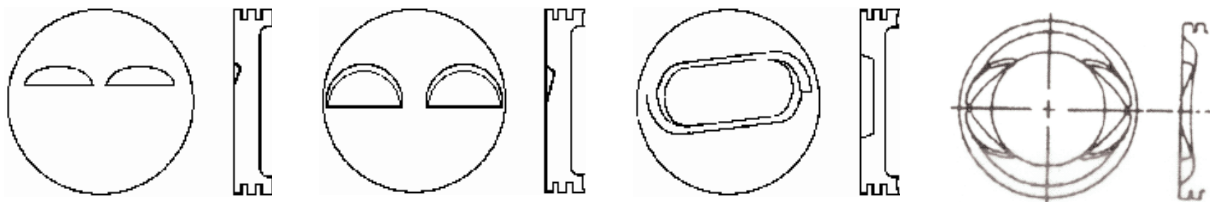


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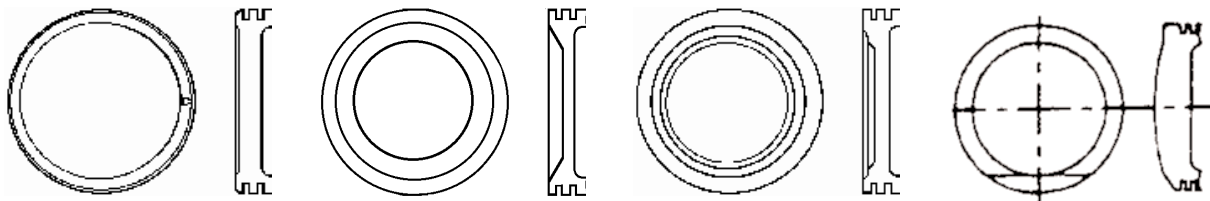


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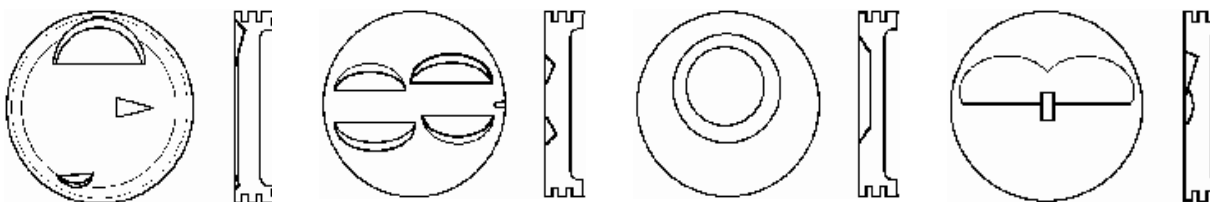


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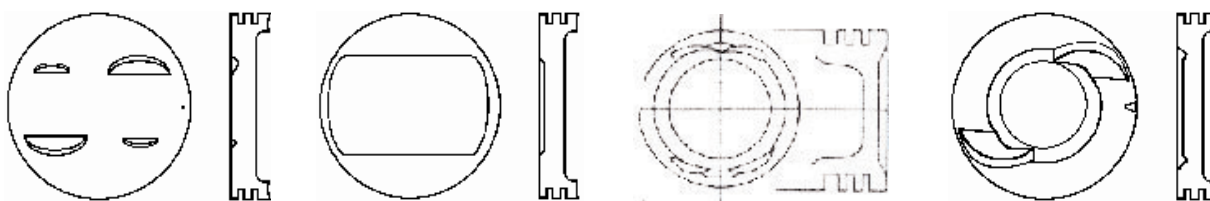


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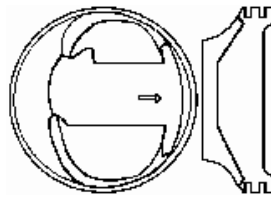
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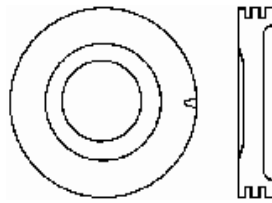
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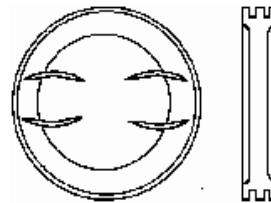
## Head Configuration Reference Diagrams



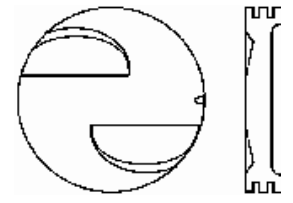
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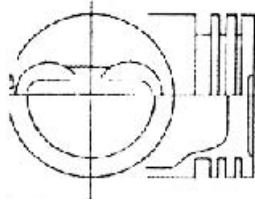
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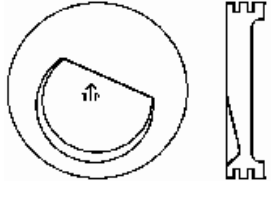
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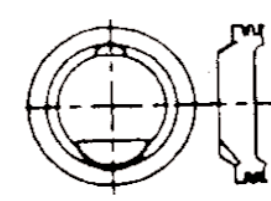
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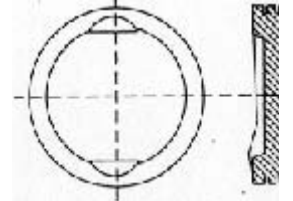
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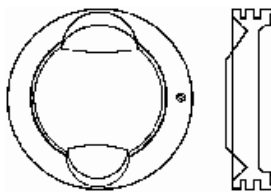
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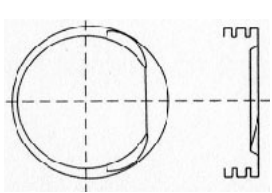
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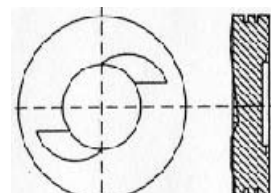
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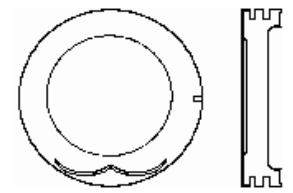
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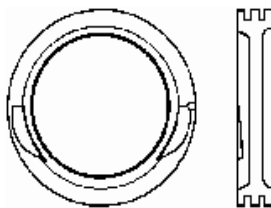
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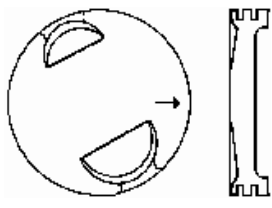
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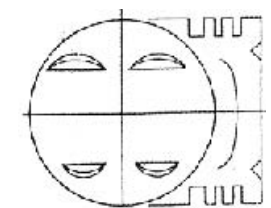
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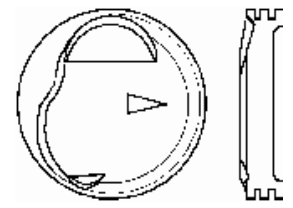
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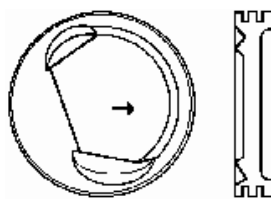
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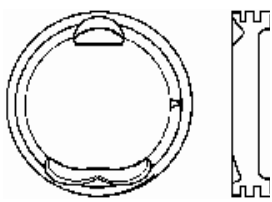
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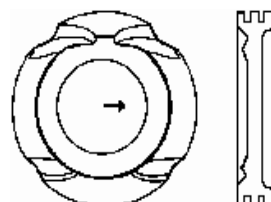
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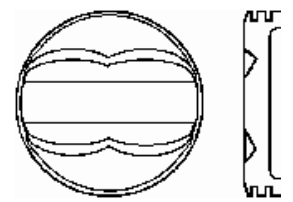
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#66



#67



#68



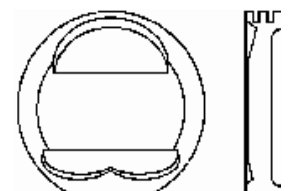
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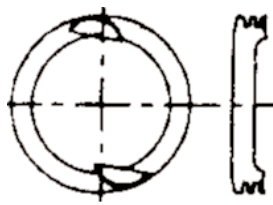


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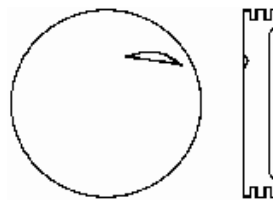


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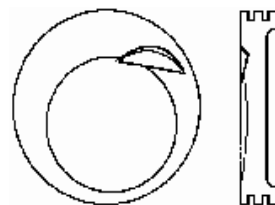
# Head Configuration Reference Diagrams



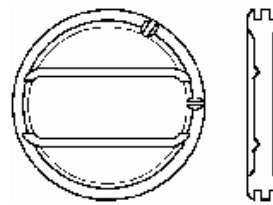
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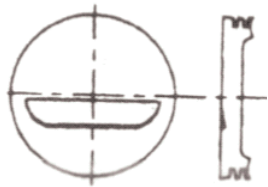
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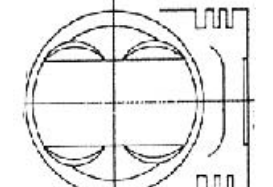
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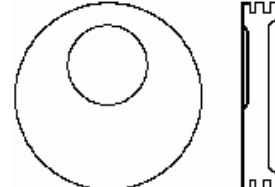
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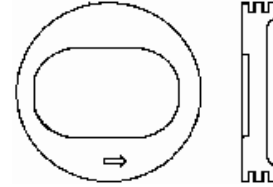
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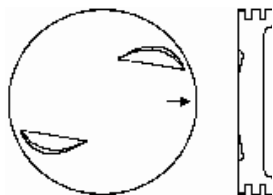
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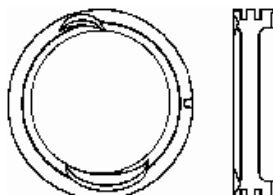
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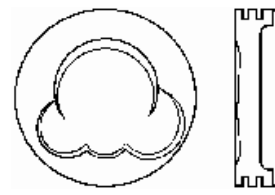
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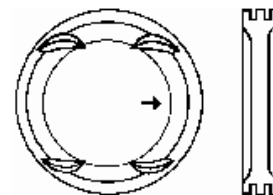
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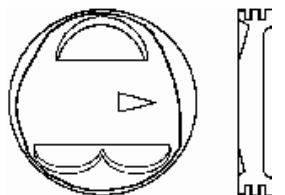
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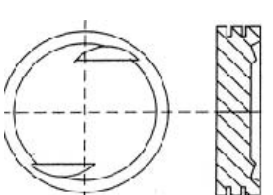
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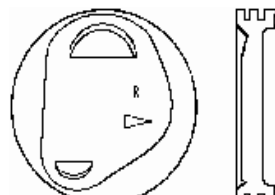
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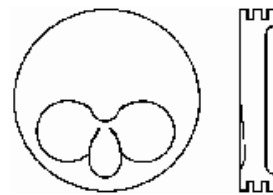
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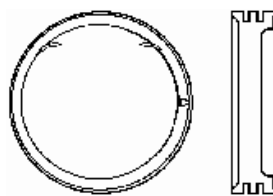
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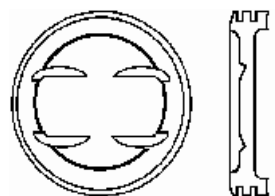
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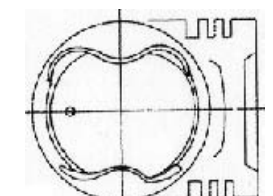
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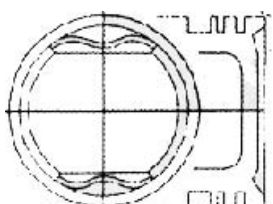
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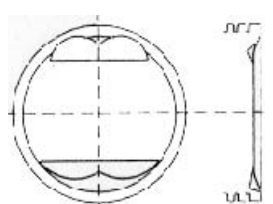
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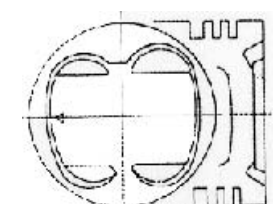
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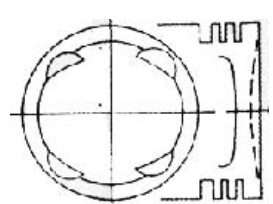
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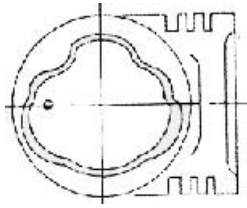


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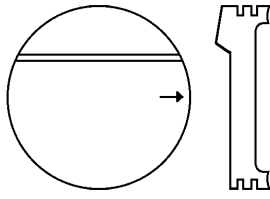


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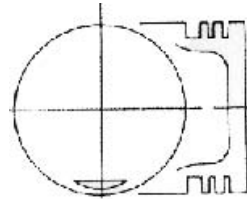
## Head Configuration Reference Diagrams



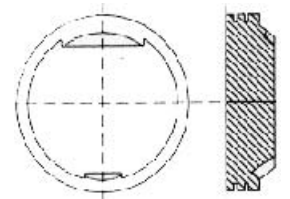
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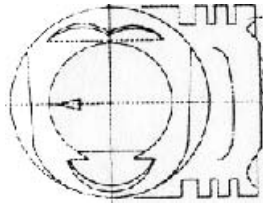
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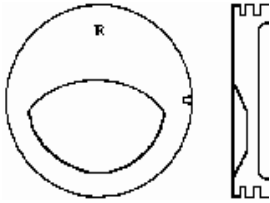
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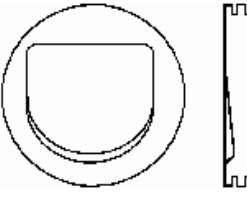
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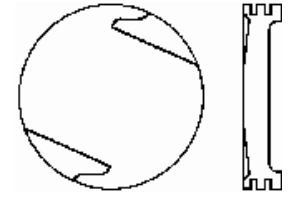
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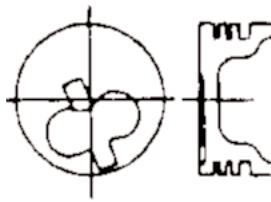
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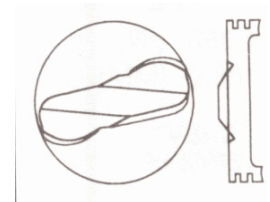
#103



#104



#105



#106

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat'l*
224-1343	-	-	4.500	114.3	7.2:1	2.72	4.76	1.2199	20	-
224-1358	-	-	3.910	99.3	8.8:1	1.791	3.2	0.9842	2	-
224-1397	TC1397	6	3.4	86.4	8.7:1	1.74	3.49	0.9012	1	-
224-1408	TC1408	8	4.125	104.8	7.5:1	1.88	3.82	1.094	3	-
224-1411	-	-	4.250	108	7.8:1	2.588	4.4	1.2399	5	-
224-1438	-	-	4.375	111.1	6.5:1	2.31	4.5	1.109	98	-
224-1504	TC1504	6	3.500	88.9	8.45:1	1.58	3.41	0.9122	1	-
-	TC1504A	8	3.500	88.9	8.45:1	1.58	3.41	0.9122	1	-
224-1526	-	6	3.563	90.5	-	1.784	3.703	0.927	-	-
224-1527	TC1527	8	4.000	101.6	8.7:1	1.654	3.51	0.9273	6	-
224-1529	TC1529	8	3.800	78	8.4:1	1.58	3.41	0.9122	1	-
224-1544	TC1544	8	3.875	98.4	varies	1.779	3.78	0.9273	11	-
-	TC1544A	6	3.875	98.4	varies	1.779	3.78	0.9273	11	-
-	TC1544B	4	3.875	98.4	varies	1.779	3.78	0.9273	11	-
224-1563	TC1563	4	3 7/16	87.3	varies	1.998	-	0.8593	1	-
-	TC1563A	6	3 7/16	87.3	varies	1.998	-	0.8593	1	-
224-1568	TC1568.020	8	3.7500	95.25	8.3:1	1.835	-	0.9398	3	-
224-1595	TC1595.020	8	4.500	114.3	6.9:1	2.468	4.37	1.312	7	-
224-1602	-	-	4.050	102.9	9.7:1	1.76	3.73	0.9752	91	-
224-1650	TC1650	6	3.680	93.5	varies	1.5	3.33	0.9122	25	-
224-1658	TC1658	6	3.875	98.4	8.4:1	1.64	3.5	0.9273	13	-
224-1666	TC1666	8	4.000	101.6	9.1:1	1.816	3.35	0.9752	6	-
224-1670	TC1670	8	4.120	104.6	8.2:1	1.7	3.28	0.9805	31	-
224-1699	TC1699	8	4.250	108	varies	1.848	3.78	1.094	1	-
224-1701	TC1701	6	4.000	101.6	8.0:1	1.747	3.39	0.9122	13	-
224-1708	TC1708	8	3.937	100	8.0:1	2.16	3.91	0.9898	74	-
224-1712	TC1712	8	4.050	102.9	9.4:1	1.76	3.73	0.9752	15	-
224-1713	TC1713	8	4.050	102.9	10.1	1.76	3.73	0.9752	6	-
224-1715	TC1715	6	3.750	95.25	varies	1.581	3.35	0.931	13	-
224-1730	TC1730	8	4.320	109.7	9.5:1 8.8:1	1.97	3.59	1.094	17	-
224-1735	TC1735	8	4.1875	106.4	9.9:1	1.942	3.32	0.9997	6	H
224-1737	TC1737	8	3.875	98.4	8.7:1	1.655	3.51	0.9273	3	-
224-1740	TC1740	8	4.057	103	varies	1.595	3.59	0.9805	25	-
224-1746	TC1746	8	4.125	104.8	8.4:1	1.72	3.47	0.9805	3	-
224-1747	TC1747.030 TC1747.040	8	4.125	104.8	10.1:1	1.72	3.47	0.9805	11	-
224-1749	TC1749	8	3.875	98.4	7.8:1	1.7	3.28	0.9805	-	-
224-1795	TC1795	6	4.000	101.6	varies	1.577	-	0.9752	1	-
224-1796	TC1796	8	4.1875	106.4	7.5:1	2.019	-	1.094	19	-
224-1810	TC1810	8	4.000	101.6	7.65:1	1.739	3.5	0.9122	26	-
224-1831	TC1831	8	4.050	102.9	8.2:1	1.66	3.63	0.9752	15	-
224-1832	TC1832.030	-	4.000	101.6	varies	1.719	3.47	0.9122	23	-
224-1840	TC1840	8	4.000	101.6	7.9:1	1.63	3.23	0.9752	29	-
-	TC1840A	6	4.000	101.6	7.9:1	1.63	3.23	0.9752	29	-
224-1842	TC1842	6	4.000	101.6	8.0:1	1.74	3.67	0.9752	13	-
224-1843	TC1843.060	6	4.000	101.6	8.0:1	1.74	3.67	0.9752	13	-
224-1845	TC1845	8	4.000	101.6	8.0:1	1.54	3.19	0.9273	24	-
224-1848	TC1848	8	4.3125	109.5	8.4:1	1.955	3.33	0.9997	3	-
224-1849	TC1849	8	4.150	105.4	8.0:1	3.07	3.07	0.9805	6	-
224-1850	TC1850	8	4.000	101.6	varies	1.576	3.16	0.9842	3	-
224-1852	TC1852	8	4.125	104.8	8.5:1	1.54	3.18	0.9273	3	-
224-1856	TC1856	8	4.360	110.7	8.0:1	1.76	3.73	1.04	35	-
224-1860	TC1860	8	4.250	108	8.0:1	2.16	-	0.9898	32	-
224-1863	TC1863	8	4.000	101.6	9.0:1	1.54	3.18	0.9273	33	-
224-1866	TC1866	8	4.342	110.3	8.0:1	1.812	-	1.094	1	-
224-1868	TC1868.020	8	4.1650	105.9	8.5:1	1.488	-	1.0007	36	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.0030	Bottom of skirt	3-3/32, 1-3/16	.27" Dome head (not included in Comp. Dist.) Iron Top Groove.
.0015	.375" up from skirt bottom	2-5/64, 1-3/16	Flat head w/2 valve reliefs.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat Head
.0020	.910" up from skirt bottom	2-3/32, 1-3/16	Recessed Head, Iron Top Groove
.0025	top of Skirt Slipper	3-3/32, 1-3/16	Recessed Head, .12" Deep
.0030	bottom of skirt	2-3/32, 1-3/16	RD450 eng., .125" Step Head, not destroked, Iron Top Groove
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat Head
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat Head
	At top of skirt slipper	2-5/64, 1-3/16	Flat Head
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat Head with 4 Valve Reliefs
.0015	.844" up from skirt bottom	1-5/64, 1-3/32, 1-3/16	Flat Head
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat Head with 4 Valve Reliefs
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat Head with 4 Valve Reliefs
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat Head with 4 Valve Reliefs
.0020	Bottom of skirt	3-1/8, 1-1/4	Flat Head. F162 and F4162 Engines.
.0020	Bottom of skirt	3-1/8, 1-1/4	Flat Head. F162 and F4162 Engines.
.0015	Bottom of skirt	2-5/64, 1-3/16	3.06" dia. Head recess .23" deep.
.0030	.437" up from skirt bottom	2-3/32, 1-3/16	V549 engine. Contoured head, not destroked. Iron Top Groove.
.0015	1.060" up from skirt bottom	1-5/64, 1-3/32, 1-3/16	2.687" dia. Head recess 5/64" deep w/ 4 valve reliefs.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	2.25" dia. Head recess .093" deep.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	3" head recess .060" deep.
.0015	.312" up from skirt bottom	1-5/64, 1-3/32, 1-3/16	Flat head w/Four valve reliefs
.0015	.250" up from skirt bottom	2-5/64, 1-3/16	Piston has 8 valve reliefs for use in either 1st or 2nd type engines.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat head piston replacing both flat head and dished O.E. pistons. Not destroked when used in 1971 engines.
.0025	1.125" up from skirt bottom	2-5/64, 1-3/16	Recessed Head .28" deep (For 1965 Thru early 1969-before Chg.L16
.0020	1.00" up from skirt bottom	1-3/32, 1-5/64, 1-3/16	Trucks, not destroked. Flat Head w/ one valve relief. Iron Top Groove.
.0015	1.00" up from skirt bottom	1-5/64, 1-3/32, 1-3/16	3" dia. Head recess 5/32" deep with four valve reliefs.
.0015	1.00" up from skirt bottom	1-5/64, 1-3/32, 1-3/16	Four valve reliefs. Pin I.D. .700"
.0015	.750" up from skirt bottom	2-5/64, 1-3/16	"D" Shaped head recess. .120" deep. Replace in full sets only.
.0015	.750" up from skirt bottom	2-5/64, 1-3/16	Flat Head. Replaces both flat head and dished O.E. pistons.
.0015	Bottom of skirt	2-5/64, 1-3/16	3.48" dia. head recess .09" deep.
.0015	.670" up from skirt bottom	2-5/64, 1-3/16	Flat head w/4 valve reliefs.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	VIN R. 2.92" dia. Head recess .215" deep.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	3.031" dia. head recess .324" deep.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	2.94" dia. Head recess .120" deep.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	VIN P. Flat Head w/4 valve reliefs.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat head. Replaces O.E. piston with recessed head.
.0015	1.00" up from skirt bottom	2-3/32, 1-3/16	Truck engine. 3-1/4" dia. Head recess 7/32" deep. Iron Top Groove.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	Windsor Eng. Rectangular head recess .227" deep.
.0015	1.00" up from skirt bottom	1-5/64, 1-3/32, 1-3/16	Car & Trk. Eng. 2-5/8" dia. Head recess 3/32" deep w/4 valve reliefs.
.0015	1.125" up from skirt bottom	2-5/64, 1-3/16	Windsor eng. Flat Head with 4 valve reliefs. Cyl. Head 60cc=9.3:1
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	2-5/16" dia. head recess 1/8" deep w/ 2 angled valve reliefs.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	2-5/16" dia. head recess 1/8" deep w/ 2 angled valve reliefs.
.0015	pin center line	2-5/64, 1-3/16	Trk. Eng. After L16, E or F150-350, P350-500. 3.25" dia. "D" shaped head recess 9/32" (.260") deep.
.0015	1.250" up from skirt bottom	2-5/64, 1-3/16	Trk. Eng. After L16. 3.25" dia. "D" head recess .28" deep. Iron Top Groove.
.0015	.750" up from skirt bottom	2-5/64, 1-3/16	Trk. Eng., Series 40 & 50. 3.500" head recess .140" deep w/2 valve reliefs.
.0020	Bottom of skirt	2-5/64, 1-3/16	3.61" dia. Head recess .245" deep.
.0015	.900" up from skirt bottom	1-5/64, 1-1/16, 1-3/16	Flat Head w/4 valve reliefs.
.0015	pin center line	2-5/64, 1-3/16	3.13" dia. Head recess .05" deep. Thru 1992 Trks.
.0015	pin center line	2-5/64, 1-3/16	Small Block. 3.46" dia. Head recess .145" deep.
.0015	1.20" up from skirt bottom	2-5/64, 1-3/16	Car & Trk. non-EFI. .228" deep head recess w/2valve reliefs (20cc head)
.0025	1.06" from bottom of skirt	1-3/32, 2-5/64, 1-3/16	Trk. Eng. Flat head w/one valve relief. Iron Top Groove.
.0015	1.06" from bottom of skirt	2-5/64, 1-3/16	Trk. Eng. Series 10 though 30 exc. Light duty. Flat head w/2valve reliefs.
.0015	.850" up from skirt bottom	2-5/64, 1-3/16	Flat Head.
.001	.189" from top of Head	2-5/64, 1-3/16	3.530" dia. Head recess .325" deep. V400 Eng.



## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat'l*
224-1869	TC1869	8	4.360	110.7	varies	1.882	3.85	1.04	35	-
224-1870	TC1870	8	4.250	108	varies	1.627	3.37	0.9898	81	-
224-1882	TC1882	8	3.875	98.4	varies	1.83	3.91	0.9752	13	-
224-1884	TC1884	8	4.125	104.8	8.0:1	1.907	3.38	1.062	54	-
224-1885	TC1885	8	4.000	101.6	8.0:1	1.655	3.51	0.9273	84	-
224-1889	TC1889	6	3.875	98.4	8.0:1	2.009	3.7	0.9273	13	-
224-1894	TC1894	8	3.875	98.4	8.2:1	1.891	3.38	1.062	1	-
224-1895	TC1895	8	3.875	98.4	8.2:1	2.2	3.69	1.062	9	-
224-1907	-	-	4.562	115.9	7.5:1	2.615	-	1.24	4	-
224-1915	-	-	3.500	88.9	8.0:1	1.473	3.015	0.9272	1	-
224-1916	TC1916	8	4.000	101.6	varies	1.585	3.34	0.9122	16	-
-	TC1916A	6	4.000	101.6	varies	1.585	3.34	0.9122	16	-
224-1921	TC1921	8	4.000	101.6	7.9:1	1.63	3.23	0.9122	29	-
224-1930	TC1930	8	3.910	99.3	varies	1.658	3.36	0.9842	1	-
224-1946	TC1946	4	3.7795	96	-	1.578	2.98	0.9122	8	-
224-1949	TC1949	8	3.800	96.52	varies	1.805	2.98	0.9398	3	-
-	TC1949A	6	3.800	96.52	varies	1.805	-	0.9398	3	-
224-1953	TC1953	4	2.9528	75	9.0:1	36mm	-	18mm	1	-
224-1973	TC1973	6	3.2677	83	varies	1.515	3.06	0.8267	34	-
224-1976	-	-	3.2677	83	varies	1.48	3.06	0.8267	37	-
224-1979	TC1979	4	3.3464	85	-	37.74mm	3.065	21mm	38	-
224-1999	TC1999	6	3.6614	93	8.0:1	1.511	2.87	0.945	1	-
224-2001	TC2001	8	4.000	101.6	7.9:1	1.921	3.53	0.9752	29	-
224-2002	TC2002	-	4.050	102.9	7.2:1	1.902	3.9	0.9752	39	-
224-2004	TC2004	8	4.050	102.9	7.2:1	1.76	3.656	0.9752	25	-
224-2006	TC2006	4	3.307	84	8.0:1	1.435	3.14	0.8665	1	-
224-2007	TC2007	8	3.910	99.3	varies	1.741	3.43	0.9842	11	-
-	TC2007A	6	3.910	99.3	varies	1.741	3.43	0.9842	11	-
224-2009	TC2009	8	4.320	109.7	8.0:1	1.912	3.53	1.094	1	-
224-2010	TC2010	4	3.1300	-	-	1.642	2.856	0.866	4	-
224-2012	TC2012	8	3.736	94.9	varies	1.54	3.19	0.9273	3	-
-	TC2012A	6	3.736	94.9	8.6:1	1.54	3.19	0.9273	3	-
224-2015	TC2015	4	3.0709	78	8.3:1	1.455	2.91	0.8665	14	-
224-2016	TC2016	6	3.3858	86	8.3:1	38.3mm	-	21mm	3	-
224-2022	TC2022.030	8	4.125	104.8	8.0:1	2.2	3.33	1.062	9	-
-	TC2022A.030	4	4.125	104.8	8.0:1	2.2	3.33	1.062	9	-
224-2034	TC2034	8	4.000	101.6	8.0:1	1.57	3.27	0.9273	1	-
-	TC2034B	4	4.000	101.6	varies	1.57	3.27	0.9273	1	-
224-2035	-	-	4.300	109	8.1:1	1.882	3.28	0.9997	1	-
224-2036	TC2036	8	3.500	88.9	varies	1.575	3.6	0.9805	3	-
224-2037	TC2037	8	4.125	104.8	8.0:1	1.92	3.41	1.02	25	-
224-2038	TC2038	8	4.351	110.5	7.9:1	1.595	3.35	0.9805	3	-
224-2039	TC2039	6	4.000	101.6	8.8:1	1.763	3.37	0.9752	43	-
224-2040	TC2040	8	4.000	101.6	8.1:1	1.752	3.35	0.9122	27	-
224-2042	TC2042	8	3.500	88.9	varies	1.54	2.98	0.9273	3	-
-	TC2042A	6	3.500	88.9	varies	1.54	2.98	0.9273	3	-
224-2047	-	-	2.8740	73	-	38.5mm	-	20mm	40	-
224-2050	TC2050	4	2.9134	74	7.9:1	1.07	2.25	0.6692	3	-
224-2052	-	-	2.9134	74	7.9:1	27.6mm	-	17mm	4	-
224-2053	TC2053	4	3.031	77	8.8:1	1.063	2.44	0.7087	17	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.0015	1.125" up from skirt bottom	2-5/64, 1-3/16	Oblong head recess .100" deep with 2 angled valve reliefs.
.0020	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat Head piston w/2valve reliefs. Used in either left or right bank cylinder banks. For 1970 replace in full sets only.
.0020	.94" up from skirt bottom	1-5/64, 1-3/32, 1-3/16	Trk. Eng., medium and heavy duty. 3.218" dia. "D" shaped head recess 5/64" deep. Pin I.D. .700"
.0030	Bottom of skirt	2-3/32, 1-3/16	Exhaust Emission engine. Recessed head, not destroyed. Iron Top Groove.
.0020	1.00" up from skirt bottom	2-5/64, 1-3/16	Trk. Eng. 3-1/4" dia. Head recess 5/64" deep w/2 valve reliefs.
.0025	.500" up from skirt bottom	2-3/32, 1-3/16	Trk. Eng. 3.187" dia. Head recess .328" deep.
.0030	Bottom of pin boss	2-3/32, 1-3/16	Exhaust emission engine. Recessed head, not destroyed. Iron Top Groove.
.0030	Bottom of pin boss	2-3/32, 1-3/16	Contoured Head, Not destroyed. V345 , V304 , Scout eng. Iron Top Groove.
.0030	Bottom of pin boss	2-3/32, 1-3/16	3.16" dia. Head recess .375" deep. Hollow pin. Iron Top Groove.
.002	.750" up from skirt bottom	2-5/64, 1-3/16	Flat head. Recommended for use w/sleeved engine only. Chevy Vega.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	2.50" dia. Head recess .156" deep w/4 valve reliefs.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	2.50" dia. Head recess .156" deep w/4 valve reliefs.
.0015	pin center line	2-5/64, 1-3/16	Cleveland eng. 2.75" dia. Head recess 1/16" deep, 2 angled valve reliefs.
.0015	.812" up from skirt bottom	2-5/64, 1-3/16	Trk. Premium engine. Flat Head, replaces both cup and flat head O.E. pistons
.0015	.65" up from skirt bottom	2-5/64, 1-3/16	Flat Head w/2 Valve reliefs. Non-Turbo Courier. Pinto, Mustang II.
.0015	top of skirt	2-5/64, 1-3/16	3.05" dia. Head recess .215" deep. Non-Turbo, VIN A.
.0015	top of skirt	2-5/64, 1-3/16	3.05" dia. Head recess .215" deep. Non-Turbo, VIN A.
.04mm	2.48" down from top	2-2.0mm, 1-4.0mm	Flat Head. K, 3K, 4K engs.
.0015	.500" up from skirt bottom	2-2.0mm, 1-4.0mm	Flat Head w/2 valve reliefs. 240Z with L24 eng. 260Z with L26 eng.
.0015	pin center line	2-2.0mm, 1-4.0mm	2.75" dia. Head recess .055" deep. All with L16 eng. U20 eng.
.0014	3.25" below centerline	2-2.0mm, 1-4.0mm	Recessed head 3mm deep. L18 eng. 610, 620, 710 OHC
.0015	.450" up from skirt bottom	1-2.0mm, 1-2.5mm, 1-4.0mm	Flat Head. Capri and Mustang II.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	2.6" dia. Head recess 0.68" deep w/ 2 angled valve reliefs.
.0020	.875" up from skirt bottom	1-3/32, 1-5/64, 1-3/16	2.6" head recess .19" deep. Iron Top Groove. 359/361 trk. Eng. After Engine U40000. 3 ring piston.
.0020	1.100" up from skirt bottom	1-3/32, 1-5/64, 1-3/16	3" dia. Head recess .31" deep. Trk. Eng. Iron Top Groove.
.0015	.850" up from skirt bottom	2-2.0mm, 1-4.0mm	Flat Head. LUV Series 1, 2, 3 & 4.
.0015	pin center line	2-5/64, 1-3/16	Flat top w/4 valve reliefs. 318 cid eng.1973 press fit, no lockrings. Use 1990 and earlier rings. 1991 and later use early style rings.
.0015	pin center line	2-5/64, 1-3/16	Flat top w/4 valve reliefs. 239 cid eng. Grand Cherokee. Fl. Dakota. Availale in fuel injected mid-sized trucks and pickups.1973 press fit, no lockrings.
.0015	.600" up from skirt bottom	2-5/64, 1-3/16	Flat Head.
.0008	.375" up from skirt bottom	1-1.75mm, 1-2.00mm, 1-4.00mm	Concave Head.
.0015	.95" Up from bottom	2-5/64, 1-3/16	3.06" dia. Head recess .09" deep.
.0015	.95" Up from bottom	2-5/64, 1-3/16	3.06" dia. Head recess .09" deep.
.0015	.600" up from skirt bottom	2-1.5mm, 1-4.0mm	Dome head .310" high. May be used to replace piston with dished head. Courier 1800cc eng.
.04mm	3.25" below centerline	2-2.00mm, 1-4.00mm	74.00mm dia. Head recess 3.10mm deep. L28 eng. (To 7-79 on non-usa cars). Press Fit Pin.
.0030	pin center line	2-3/32, 1-3/16	Without Exhaust Emission. Countoured Head. Not Destroyed
.0030	pin center line	2-3/32, 1-3/16	Without Exhaust Emission. Countoured Head. Not Destroyed
.0015	.800" up from skirt bottom	2-5/64, 1-3/16	Flat Head.
.0015	.800" up from skirt bottom	2-5/64, 1-3/16	Flat Head. Chevy-Iron Duke. Olds-All 151 engs. in 1978. All VIN 1 w/Calif. in 1979.
.0010	pin center line	2-5/64, 1-3/16	2-1/2" dia. Head recess 1/8" deep. (7cc dish).
.0015	1.125" up from skirt bottom	2-5/64, 1-3/16	2.35" dia. Head recess .165" deep.
.0020	.700" up from skirt bottom	2-3/32, 1-3/16	3.500" dia. Head recess .325" deep. Not destoked. MV404 & MV446 eng.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	3.23" dia. Head recess .146" deep.
.0015	.900" up from skirt bottom	2-5/64, 1-3/16	2.4" Dia. Off center circular head recess .30" deep. Trk Eng.
.0015	1.60" up from skirt bottom	2-5/64, 1-3/16	rectangular head recess .105" deep w/2 valve reliefs, 11.5cc. Windsor Eng.
.0015	.750" up from skirt bottom	2-5/64, 1-3/16	2.875" dia. Head recess .125" deep.
.0015	.750" up from skirt bottom	2-5/64, 1-3/16	2.875" dia. Head recess .125" deep.
.04mm	.375" up from skirt bottom	2-2.00mm, 1-4.00mm	Domed head 60.50mm dia, 1.50mm high. TC Eng. SOHC.
.0015	.75" from bottom	2-1.50mm, 1-4.00mm	Recessed head .085". ED1, ED2, ED3, ED4 engs.
.04mm		2-1.50mm, 1-4.00mm	53mm dia. Recessed head 1.50mm deep. EC & ED eng.
.0012	.470" up from skirt bottom	2-1.5mm, 1-4.0mm	2.215" dia. Head recess .054" deep. Accord EK1 eng.

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat!*
224-2054	-	-	2.8346	72	8.1:1	30.0mm	-	17mm	14	-
224-2055	TC2055	4	3.307	84	8.4:1	1.435	3.13	0.8665	17	-
224-2067	TC2067	6	3.500	88.9	-	1.797	2.975	0.94	17	-
224-2073	TC2073	4	3.346	85	8.5:1	1.482	3.06	0.8267	4	-
224-2079	TC2079	4	3.3465	85	9.0:1	7.762	3.58	0.8664	100	-
224-2081	-	-	3.7008	94	8.3:1	47.6mm	-	25.15mm	14	-
224-2088	TC2088	4	3.2283	82	8.5:1	1.288	2.66	0.9055	3	-
224-2093	TC2093	4	3.307	84	8.5:1	39.6mm	3.122	22mm	99	-
224-2099	TC2099	4	2.9134	74	8.8:1	29mm	-	18mm	93	-
224-2101	TC2101	4	3.484	88.5	8.4:1	1.51	3.39	0.8665	37	-
224-2108	TC2108	8	4.000	101.6	varies	1.585	3.34	0.9122	42	-
-	TC3055	8	4.057	103	varies	1.77	3.36	1.095	44	-
-	TC3055A	6	4.057	103	varies	1.77	3.36	1.095	44	-
224-2114	-	-	3.012	76.51	23.5:1	1.768	3.027	0.866	18	-
224-2117	-	-	3.0709	78	8.3:1	1.555	-	0.8658	4	-
224-2120	TC2120	8	4.360	110.7	8.0:1	2.14	3.61	1.04	81	-
224-2122	TC2122	8	4.050	102.9	8.0:1	2.12	3.59	1.04	81	-
224-2123	TC2123	6	3.965	100.7	8.0:1	1.808	2.99	0.9398	3	-
224-2125	TC2125	4	3.228	82	8.6:1	1.474	2.97	0.9055	3	-
224-2126	-	-	3.800	96.52	8.2:1	2.007	-	0.9996	1	-
224-2127	TC2127	8	3.680	93.5	8.8:1	1.585	3.12	0.9122	45	-
224-2128	TC2128	4	3.1875	81	8.6:1	1.633	-	0.812	17	-
224-2130	TC2130	6	3.504	89	8.5:1	1.578	3.03	0.9055	1	-
-	TC2130B	4	3.504	89	8.5:1	1.578	-	0.9055	1	-
224-2132	TC2132	8	3.800	96.5	7.9:1	1.595	3.6	0.9805	3	-
224-2141	TC2141	4	4.000	101.6	9.0:1	1.57	3.25	0.9273	3	-
224-2151	TC2151	4	3.1496	80	8.0:1	1.406	2.86	0.7868	1	-
224-2154	TC2154	4	2.992	76	8.5:1	30mm	2.559	19mm	43	-
224-2158	TC2158	6	3.750	95.25	8.2:1	1.632	3.4	0.931	46	-
224-2159	TC2159	4	3.5866	91.1	8.2:1	1.385	3.06	0.8662	1	-
224-2178	-	-	3.4250	86.995	8.5:1	1.398	2.835	0.827	47	-
224-2179	TC2179	6	3.8000	96.5	8.0:1	1.805	2.99	0.9398	3	-
224-2182	-	4	3.3465	85.00	8.5:1	1.26	2.637	21.0mm	-	-
224-2185	TC2185	8	3.9764	101	20.1:1	2.119	3.3	1.22	18	-
224-2187	TC2187	6	3.811	96.8	8.65:1	1.584	3.031	0.9122	48	-
224-2190	TC2190	8	4.000	101.6	19.7:1	1.945	3.45	1.11	18	-
224-2192	TC2192	4	3.4449	87.5	8.5:1	1.57	3.02	0.9009	1	-
224-2222	TC2222	8	3.736	94.9	9.5:1	1.54	3.19	0.9273	6	-
224-2225	TC2225	6	3.800	96.5	8.5:1	1.808	3	0.9398	1	-
224-2226	TC2226	4	3.1496	80	8.8:1	1.56	2.75	0.812	49	-
224-2230	TC2230	4	3.4449	87.5	8.5:1	1.593	3	0.9012	50	H
224-2231	TC2231	8	3.7500	95.25	8.5:1	1.638	-	0.9309	-	-
224-2234	TC2234	8	4.08	103.63	9.0:1	1.58	3.54	0.931	51	-
224-2274	TC2274	4	3.5180	89.4	8.0:1	1.578	2.98	0.9122	52	-
224-2275	TC2275	4	2.9134	74	8.9:1	27.7mm	2.48	17mm	100	-
224-2276	-	-	2.8346	72	7.9:1	27.5mm	-	17mm	17	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.01mm	.500" up from skirt bottom	2-1.50mm, 1-4.00mm	65mm dia domed head 2.50mm high. EB2, EB3, EE engines.
.0015	1.00" up from skirt bottom	2-2.0mm, 1-4.0mm	280" dia. head recess .068" deep. Isuzu-G180Z eng. Chevy-LUV series 5, 6, 8, 9, 10, 11 & 12. Buick-Used in Opel.
.0024	bottom of skirt	2-5/64, 1-3/16	-
.0015	.800" up from skirt bottom	2-2.0mm, 1-4.0mm	2.91" dia. Head recess .10" deep. All with L20 eng.
.002	.945" up from skirt bottom	2-2.0mm, 1-4.0mm	.23" Dome included in compression distance w/2 valve reliefs. For all except engs. Built from 8-74 to 8-76. Use in sets only after 8-77
.02mm	.625" up from skirt bottom	1-2.00mm, 1-2.50mm, 1-4.00mm	75mm dia. Domed head 6.50mm high. 2F eng.
.0010	.600" up from skirt bottom	2-1.5mm, 1-4.0mm	2-3/8" dia. head recess, 3/32" deep. For 1976 replace in full sets only.
.0012	3.25" below centerline	2-2.00mm, 1-4.00mm	U, 4G52 eng. Flat head w/1 valve relief.
.01mm	.433" up from skirt bottom	2-1.50mm, 1-4.00mm	66mm dia. Recessed head 1.50mm deep. SOHC Mitsubishi "J" eng. (1979-84), "Q" eng. (1980-84)
.0015	1" Up from bottom	1-2.0mm, 1-2.5mm, 1-4.0mm	.110" Crown head. 20R eng.
.0015	pin center line	2-5/64, 1-3/16	Flat top with 4 valve reliefs.
.0035	.700" up from skirt bottom	2-5/64, 1-3/16	2 Large Valve Reliefs with Fire Slot. For use on either Right or Left cyl. Bank. Iron Top Grove. LF9 Diesel.
.0035	.700" up from skirt bottom	2-5/64, 1-3/16	2 Large Valve Reliefs with Fire Slot. For use on either Right or Left cyl. Bank. Iron Top Grove. LT6 Diesel. LT7 with Fire Slot.
	See O.E. repair manual	1-1.75mm, 1-2.00mm, 1-3.00mm	Swirl Chamber Recess 1.8mm deep. Volkswagon Golf, Passat Diesel. (8/76-7/80)
.0015	.600" up from skirt bottom	2-1.50mm, 1-4.00mm	2.181 dia. Recessed head, .100" deep. Courier VB eng.
.0025	.75" Up from bottom	1-3/32, 1-5/64, 1-3/16	Flat Head w/2 valve reliefs. Trk. Eng. Iron Groove.
.0020	.80" up from bottom	1-3/32, 1-5/64, 1-3/16	Flat Head w/2 valve reliefs. Trk. Eng. Iron Groove.
.0015	at bottom of skirt	2-5/64, 1-3/16	3.913" dia. Head recess .256" deep.
.0010	.700" up from skirt bottom	2-1.5mm, 1-4.0mm	2.46" dia. Head recess .020" deep.
.0015	.750" up from skirt bottom	2-5/64, 1-3/16	Flat Head. Shallow Oil Groove.
.0015	.800" up from skirt bottom	2-5/64, 1-3/16	Flat Head w/4 valve reliefs.
.001	.700" up from skirt bottom	1-1/16, 1-5/64, 1-5/32	2.290" dia. Recessed head .500" deep. 1978-80 car.
.0012	.750" up from skirt bottom	1-1.5mm, 1-2.0mm, 1-4.75mm	Flat Head. VIN W. 2nd design with 1.5mm top ring.
.0012	.750" up from skirt bottom	1-1.5mm, 1-2.0mm, 1-4.75mm	Flat Head. VIN W. 2nd design with 1.5mm top ring.
.0015	1.00" up from skirt bottom	2-5/64, 1-3/16	2.70" dia head recess .107" deep.
.0025	.80" up from skirt bottom	1-1/16, 1-5/64, 1-3/16	3.07" dia. Head recess .226" deep. Shallow groove. Low Tension rings.
.0013	.700" up from skirt bottom	1-1.2mm, 1-1.5mm, 1-4.0mm	Flat Head. Use early design ring pack. Ford-Courier.
.0012		1-1.2mm, 1-2.00mm, 1-4.00mm	Small round Recess in head . A15 eng.
.0015	.310" up from skirt bottom	2-5/64, 1-3/16	Recessed head .185" deep.
.0015	.750" up from skirt bottom	2-2.00mm, 1-4.00mm	.200" recessed head. Shallow Oil Groove Mitsu.-F & W to 4/83. G54B eng.
.0008	.700" up from skirt bottom	2-1.50mm, 1-4.00mm	Recessed head w/4 valve reliefs.
.0015	bottom of skirt	2-5/64, 1-3/16	3.05" dia. Head recess .245" deep. Turbo.
.0004	1.260" Down from top of head	2-1.50mm, 1-4.00mm	Flat Head w/4 small recesses. (1980-81) Z20E, Z20S eng. From 1/80. (1980-89) Car & trk. (non-USA) Z20 eng., from 7/80. Use ring set# 41289.
.0025	.375" Up from bottom.	1-3.00mm, 1-2.00mm, 1-4.00mm	Ricardo recess .158 in. deep 6.2L GM Diesel. Ni-Resist Ring Carrier.
.0015	.750" up from skirt bottom	2-2.00mm, 1-4.00mm	2.170" dia head recess .071" deep w/2 valve reliefs.
.0050	1.00" up from skirt bottom	2-5/64, 1-7/64	Diesel Trk. Swirl Chamber, (6.6cc cup). B Series. Not Destroyed. Iron Top Groove
.0014	.650" up from skirt bottom	2-1.50mm, 1-4.0mm	Flat Top. Omni & Horizin with E62 Engine. 1983-86 C.R. = 9.0:1. Shallow Groove
.0015	pin center line	2-5/64, 1-3/16	Flat head w/4 valve reliefs. H.O. engs. LU7 eng. TBI.
.0015	bottom of skirt	2-5/64, 1-3/16	Flat Top. Buick-LK9 eng. 1985 high deck engs, used in "C" cars only.
.0026	.250" up from skirt bottom	2-1.50mm, 1-4.0mm	Dome head .310" high. May be used to replace dished head pistons. Courier 1800cc eng.
.0023	pin center line	2-1.50mm, 1-4.00mm	2.20" dia. Head recess .190" deep. Turbo. Shallow Groove. Not Destroyed
.0010	1.00" up from skirt bottom	2-5/64, 1-3/16	.170" Recessed head. Press Fit Pin.
-	.750" up from skirt bottom	2-2.00mm, 1-5.00mm	3.60" dia head recess .190" deep w/ 4 valve reliefs.
.0015	.580" up from skirt bottom	2-2.00mm, 1-4.75mm	Flat head w/2 Valve reliefs Ranger.
.0012	1.68" down from top	2-1.25mm, 1-2.80mm	Recessed Head w/2 valve reliefs.
.01mm	bottom of skirt	2-1.50mm, 1-4.00mm	63.00mm dia head recess .50mm deep. EJ1 eng.

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat'l*
224-2281	TC2281	4	3.3369	84.78	8.8:1	1.555	-	0.9055	-	-
224-2283	TC2283	4	3.680	93.5	9.0:1	1.5	3.03	0.9122	1	-
224-2284			2.8346	72	8.0:1	27.5mm	2.461	17mm	4	-
224-2289	TC2289	4	3.3858	86	8.8:1	35mm	2.756	22mm	53	-
224-2290	-	-	3.7008	94	-	47.9mm	-	25.15mm	1	-
224-2291	TC2291	4	3.622	92	9.0:1	1.526	3.63	0.8665	-	-
224-2297	-	-	3.031	77	-	1.22	2.48	0.787	-	-
224-2300	-	-	3.3465	85	-	40.5mm	-	22.0mm	55	-
224-2302	-	-	3.3268	84.5	8.5:1	1.165	2.26	0.7874	94	-
224-2303	-	-	2.9921	76	-	33.50mm	-	19.0mm	4	-
224-2304	TC2304	4	2.9921	76	8.5:1	1.2795	2.46	0.748	56	-
224-2305	TC2305	4	2.9921	76	9.4:1	1.262	2.44	0.7485	25	-
224-2308	-	-	-	80	-	1.425	2.882	0.787	1	-
224-2309	-	-	-	77	-	1.142	2.402	0.787	-	-
224-2310	TC2310	4	3.307	84	8.7:1	33.4mm	2.771	20mm	53	-
224-2311	TC2311	4	3.189	81	9.0:1	1.193	2.37	0.709	107	-
224-2312	TC2312	6	3.2677	83	8.8:1	1.28	2.77	0.8665	57	-
224-2313	-	-	3.0512	77.5	-	31.0mm	-	18.0mm	33	-
224-2314	-	-	3.0512	77.5	9.1:1	1.201	2.39	0.7088	58	-
224-2315	TC2315	4	3.622	92	9.3:1	1.355	2.49	0.8665	60	-
224-2321	TC2321	4	4.000	101.6	-	1.625	3.27	0.9273	13	H
224-2322	TC2322	6	4.000	101.6	9.2:1	1.581	3.29	0.931	-	-
-	TC2322B	4	4.000	101.6	9.2:1	1.581	3.29	0.931	46	-
224-2330	TC2330	4	3.327	84.5	8.5:1	29.5mm	2.559	20mm	47	-
224-2331	TC2331	6	3.425	87	varies	1.25	2.62	0.8259	81	-
224-2332	TC2332	4		96	-	-	-	-	-	-
224-2334	TC2334	4	2.972	75.5	9.4:1	29mm	2.283	18mm	93	-
224-2335	TC2335	4	3.425	87	8.4:1	1.455	3.15	0.8662	-	-
224-2336	-	-		76.5	-	1.643	2.822	24mm	-	-
224-2338	-	-	3.310	-	-	1.752	2.937	0.984	18	-
224-2347	TC2347	4	3.4449	87.5	9.0:1	1.573	2.78	0.9009	61	-
224-2348	TC2348	4	3.4449	87.5	varies	1.573	2.78	0.9009	-	-
224-2349	TC2349	4	3.4449	87.5	8.0:1	1.591	2.76	0.9009	61	H
224-2350	TC2350	4	3.2260	81.94	9.0:1	1.47	2.65	0.8121	62	-
224-2351	TC2351	4	3.2260	81.94	9.0:1	1.54	2.92	0.8121	1	-
224-2353	TC2353	6	3.504	89	9.3:1	1.535	2.64	0.9122	1	H
224-2357	TC2357	6	3.504	89	8.5:1	1.599	3.05	0.9055	1	-
224-2358	TC2358	4	3.504	89	9.0:1	1.578	2.76	0.8002	16	-
224-2359	TC2359	8	3.464	88	8.5:1	1.63	3.33	0.8657	3	-
224-2364	-	-	3.012	76.5	23.5:1	1.642	2.822	0.945	18	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
0.001	2.43" down from top	1-1.50mm, 1-1.75mm, 1-4.00mm	2.710" dia. Head recess .125" deep. Thin rings and shallow groove for low tension oil ring. Opel Brazilian eng.
.0015	1.126" up from skirt bottom	2-5/64, 1-3/16	Flat Head. HSC Eng.
.0012	bottom of skirt	2-1.50mm, 1-4.00mm	Recessed head .5mm deep.
.0012	.71" up from skirt bottom	2-1.50mm, 1-4.00mm	Recessed head.
.02mm	80.8mm from top of head	1-2.00mm, 1-2.50mm, 1-4.00mm	Flat head w/0.3mm step rim. 2FE eng.
.0015	1.259" up from skirt bottom	1-2.00mm, 1-2.5mm, 1-4.00mm	Crown .25" high with 2.30" dia. Ead recess .20" deep. 22R eng.
-		2-1.50mm, 1-4.00mm	Dish head, 1.2mm deep. Appl: 1979-80 1415cc 4 cyl. Mazda.
.01mm	52.5mm from top of dome	2-1.50mm, 1-4.00mm	70.00mm dia dome head 5.30mm high. Non-USA car: 3T eng. To 8/81. USA car-8/79 to 8/82 ETC eng.
.0015		2-1.50mm, 1-4.00mm	Recessed head .06" deep w/4 valve reliefs. Use early style rings. CA20E, S only.
.02mm	36mm from top of head	2-1.50mm, 1-4.00mm	70.00mm dia head recess, 10.00mm deep. Non usa car-E15 from 8/81-7/82. USA car-E15 eng.-310-Sentra from 8/81-7/82
.0015		2-1.50mm, 1-4.00mm	.420" recessed head; exc. Turbo. E15S, E15T.
-	.500" up from skirt bottom	2-1.50mm, 1-4.00mm	2.35" dia. Head recess .360" deep. E16, E16i & E16S engines. Sentra 82-88, Pulsar 84-88. 1987-88 EFI.
-	.687" up from skirt bottom	1-1.50mm, 1-2.00mm, 1-4.00mm	Flat head. 1982-86 2000cc Mazda, B2000 & 626.
-	.625" up from skirt bottom	1-1.50mm, 1-2.00mm, 1-4.00mm	Recessed head with 1 valve relief. 1983-85 Mazda 1500cc (GLC 1490).
.0008	.787" up from skirt bottom	2-1.50mm, 1-4.00mm	Recessed head 4.2mm deep. 2SELC eng.
.0017	.500" up from skirt bottom	2-1.50mm, 1-2.80mm	Heart Shaped recess .129" deep. 4ALC eng. Chevy-Nova. Toyota-OHC
.0015	bottom of pin boss	2-1.50mm, 1-4.00mm	Dome .143" high 2.37" dia. W/2 valve reliefs. Full Floating pin. 5MGE eng.
.01mm	51mm from top of head	2-1.50mm, 1-2.80mm	Flat head w/2 valve reliefs. 1AC eng.
.004	bottom of skirt	2-1.50mm, 1-2.80mm	Recessed head .11" deep w/2 valve reliefs. 3AC eng.
.0015	.500" up from skirt bottom	2-1.50mm, 1-4.00mm	2.50" dia. Head recess .070" deep w/ 2 valve reliefs. 22R eng. Replacement Style Piston
.0020	1.00" up from skirt bottom	2-5/64, 1-3/16	3.20" dia. Head recess .13" deep, (14cc cup). Mercruiser Marine reverse rotation engine. Not Destroyed. Hypereutectic with T6 Heat Treatment
.0015	pin center line	2-5/64, 1-3/16	Rectangular head recess .096" deep. VIN U.
.0015	pin center line	2-5/64, 1-3/16	Rectangular head recess .096" deep. VIN U.
.0015	.600" up from skirt bottom	2-1.50mm, 1-4.00mm	Recessed head 1.7mm deep, w/4 valve reliefs. CA20E eng., CA20S eng.
.0015	.562" up from skirt bottom	2-1.5mm, 1-2.8mm	Flat head w/2 valve reliefs. VG30E & VG30I eng. SOHC non-turbo. Late style rings. Use with part number 41578. 200SX, 300ZX, Maxima, Pathfinder, Pickup. Comes with lockrings.
-	.750" up from skirt bottom		11/82-5/85, 2389cc Datsun 720 Pickup (Z24) eng.
.0008	.500" up from skirt bottom	2-1.50mm, 1-4.00mm	Recessed head .7mm deep w/4 valve reliefs. Mitsubishi& Chrysler-G15B, G4AJ eng., Chrysler-Q eng., Hyundai-G4AJ eng.
.001	2.35" from top of head	2-1.50mm, 1-4.00mm	1984-85 1949cc (G200Z eng.), Isuzu troper II. 1983-85 GMC "S" Series truck. (1.9L), 119 CID eng. SOHC. 1982 style ring pack (use w/ ring set# 41453)
-	See O.E. repair manual	1-1.75mm, 1-2.00mm, 1-3.00mm	Ricardo Bowl head.
.0010	.312" up from skirt bottom	1-2.50mm, 1-2.00mm, 1-4.50mm	-
.0013	.400" up from skirt bottom	2-1.5mm, 1-4.0mm	2.64" dia. Head recess .161" deep. Non-turbo, non-EFI.
.0013	.400" up from skirt bottom	2-1.5mm, 1-4.0mm	Trench valve relief. Non-turbo. All Fuel Injected. Carb. Omni and Horizon.
.0023	.720" Up from bottom	2-1.5mm, 1-4.0mm	2.60" dia. Head recess .190" deep w/2 valve reliefs. Lock-rings included. Not destroyed. Shallow Groove. Hypereutectic Turbo.
.0020	.475" Up from bottom	2-1.5mm, 1-4.0mm	Flat head w/2 valve reliefs. Not EFI. Not Destroyed. Shallow Groove.
.0020	.60" Up from bottom	2-1.5mm, 1-4.0mm	Contoured Head. EFI. Not Destroyed. Shallow Groove.
.0015	.38" Up from bottom	2-1.5mm, 1-4.0mm	Flat head. Hypereutectic. Not destroyed after Jan. 1990. Pass. Car & trks. Not special HO models. Shallow Groove.
.0012	.700" Up from bottom	1-1.5mm, 1-2.0mm, 1-4.75mm	Flat head. May replace 224-2130 but will not be Destroyed. Isuzu-Trooper & pickup. VIN R. Shallow Groove.
.0012	top of skirt slipper	2-1.5mm, 1-4.75mm	2.37" dia. Head recess .155" deep. Small pin. Shallow Groove.
.0015	top of skirt slipper	2-2.0mm, 1-4.00mm	2.10" dia. Head recess .142" deep. Available in .003" & .005" oversizes. VIN 8. Shallow Groove.
.0012	1.00" up from skirt bottom	1-1.75mm, 1-2.00mm, 1-3.00mm	Ricardo Bowl Head. Volkswagon Golf, akt., Aufladung, Fahrzeug (8/89-7/92); Jetta (8/89-9/91); USA Rabbit, Golf, Jetta, Passat, Santana, 245/247/251/253/255 (8/81-10/91); Passat (8/88-7/93); Aufladung, Fahrzeug: LT 28/31/35/40/45/50/55 (12/82-8/92).

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat'l*
224-2366	-	-	3.622	92	8.5:1	1.815	2.975	0.945	25	-
224-2367	-	-	3.622	92	7.5:1	1.835	2.815	0.945	25	-
224-2368	-	-	3.012	76.5	-	1.647	2.824	0.945	18	-
224-2374	TC2374	4	2.9724	75.5	9.4:1	1.146	2.31	0.7088	13	-
224-2375	TC2375	4	3.5866	91.1	-	35.20mm	-	22mm	3	-
224-2377	-	-	3.268	83	-	30mm	2.559	19.99mm	-	-
224-2378	-	-	3.346	85	-	32mm	2.638	21.01mm	-	-
224-2379	-	-	3.3858	86	-	38mm	3.079	21.01mm	-	-
224-2380	-	-	3.268	83	-	48.01mm	3.543	26.01mm	-	-
224-2382	-	-	3.4645	88	-	47.50mm	3.543	27mm	-	-
224-2384	-	-	3.14956	80	varies	30mm	2.618	20mm	47	-
224-2387	-	-	3.6220	92	-	1.937	-	27mm	105	-
224-2500	-	-	3.3858	86	varies	35mm	2.637	22mm	63	-
224-2511	TC2511	8	4.000	101.6	varies	1.54	3.2	0.9273	6	H
224-2517	TC2517	8	4.000	101.6	8.4:1	1.54	3.19	0.9273	25	-
224-2552	TC2552	6	3.800	96.5	9.0:1	1.805	2.91	0.9398	3	-
224-2553	TC2553	8	4.082	103.7	8.2:1	2.003	3.72	0.9997	1	-
224-2554	TC2554	4	3.226	81.94	9.0:1	1.286	2.48	0.8121	65	-
224-2555	TC2555	6	3.811	96.8	9.0:1	1.614	2.71	0.9122	48	-
224-2556	TC2556	4	3.226	81.94	9.0:1	1.367	2.55	0.8121	49	H
224-2557	TC2557	4	2.7953	71	9.0:1	1.12	2.35	0.787	66	-
224-2558	TC2558	8	3.7360	94.9	varies	1.54	3.19	0.9275	91	-
224-2559	TC2559	4	3.054	89	9.0:1	1.33	2.15	0.8002	3	-
224-2561	TC2561	4	3.3858	86	7.8:1	1.42	2.79	0.8657	67	H
224-2563	TC2563	4	3.3862	86	8.6:1	1.417	2.795	0.8653	67	-
224-2565	TC2565	8	4.040	102.6	10.2:1	1.824	3.51	0.9842	68	-
224-2566	TC2566	4	3.0709	78	-	1.23	2.46	0.7865	66	-
224-2567	TC2567	4	4.000	101.6	varies	1.566	2.85	0.9273	3	H
224-2581	TC2581	6	4.000	102	8.5:1	1.767	3.367	0.9751	13	H
224-2587	TC2587	8	4.000	101.6	8.2:1	1.608	3.35	0.9122	69	-
224-2625	TC2625.020	4	3.875	98.4	4.2:1	1.906	-	0.9997	1	-
224-2692	-	-	3.0118	76.5	-	1.647	2.825	0.945	-	-
224-2694	TC2694	8	4.000	101.6	7.9:1	1.54	3.19	0.9273	91	-
-	TC2694A	6	4.000	101.6	7.9:1	1.54	3.19	0.9273	91	-
224-2695	-	-	3.3369	84.78	8.0:1	1.555	2.82	0.9055	56	-
224-2696	-	-	4.000	101.6	-	1.54	3.07	0.9275	15	-
224-2699	TC2699	6	3.661	93	9.0:1	1.527	2.87	0.9450	61	-
224-2701	-	-	3.5866	91.1	-	-	-	-	-	-
224-2704	-	-	4.000	101.6	7.8:1	1.767	3.37	0.9751	-	H
224-2705	-	-	3.7795	96	-	1.575	2.85	0.9122	8	H

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.0012	1.00" up from skirt bottom	1-1.75mm, 1-2.00mm, 1-4.00mm	Recessed Head 2.1mm deep. Vergaser, Fahrzeug: 242, 244, 245 (1974-1978); Einspritzung, Fahrzeug: 242, 244, 245 (USA) (1979-1980).
.0012	1.00" up from skirt bottom	1-1.75mm, 1-2.00mm, 1-4.00mm	Recessed Head 2.3mm deep. Einspritzung, Aufladung: Fahrzeug: 240, 244, 245; Einspritzung Aufladung, Fahrzeug: 244 (USA), (1980- ?)
.0012	1.00" up from skirt bottom	1-1.75mm, 1-2.00mm, 1-3.00mm	Ricardo Bowl Head.
.0012	3.25" below pin centerline	2-1.50mm, 1-4.00mm	Recessed head .15" deep (For 1987-90 engs.)
.02mm	67.2mm from top of head	2-1.50mm, 1-4.00mm	2.670" dia. Head recess .200" deep. (1984-85 u.s.a car FWD from 5/83, 1984-87 LD trk. FWD from 5/83; SOHC TURBO 1984-89).
.0008	.600" up from skirt bottom	2-1.50mm, 1-2.80mm	Flat head w/4 valve reliefs
.0005	.500" up from skirt bottom	2-1.50mm, 1-4.00mm	Recessed head w/4 valve reliefs in recess
.0008	.625" up from skirt bottom	1-1.50mm, 1-2.00mm, 1-4.00mm	Recessed head
.0030	.562" up from skirt bottom	1-2.50mm, 1-2.00mm, 1-4.50mm	Ricardo Bowl recess w/2 valve reliefs
.0062	.600" up from skirt bottom	1-2.50mm, 1-2.00mm, 1-4.50mm	Ricardo Bowl recess w/2 valve reliefs
.0015	top of skirt slipper	2-1.50mm, 1-4.00mm	Recessed head 1.2mm deep w/4 valve reliefs. ET2 & A18A1 12V engs.
.05mm	pin center line	2-2.00mm, 1-4.00mm	Recessed head 1.50mm deep. Diesel 2L Eng.
.0008	.500" up from skirt bottom	1-1.20mm, 1-1.50mm	Flat top w/4 valve reliefs. Celica GTS DOHC, 3SGELC 16 V eng.
.0015	top of skirt slipper	2-5/64, 1-3/16	Flat head w/4 valve reliefs. Not intended for Racing. Destroyed .020" . Same as 224-2770 except Hypereutectic.
.0015	pin center line	2-5/64, 1-3/16	3.30" dia. Head recess .270" deep. (32cc). For use with 305 heads.
.0015	bottom of skirt	2-5/64, 1-3/16	2.49" dia. Head recess .160" deep.
.0015	.880" up from skirt bottom	2-5/64, 1-3/16	Flat Head.
.0020	Down 2.03" from top of head	2-1.50mm, 1-3.0mm	Wedge type head recess, 2 valve reliefs. Escort, CFI. 1996 SEFI, J. Shallow Groove
.0015	.450" up from skirt bottom	2-1.50mm, 1-4.0mm	2.170" dia. Head recess .145" deep w/2 valve reliefs. Non-superchrgd. Shall. Grv.
.0015	.400" up from skirt bottom	2-1.50mm, 1-3.0mm	Contoured Head. EFI. Hypereutectic. Not Destroyed. Shallow Groove.
.0013	.500" up from skirt bottom	1-1.20mm, 1-1.50mm, 1-3.00mm	Crowned head head recess 2.40" dia., .040" deep w/3 valve reliefs (5.0cc), Festiva.
.001	1.80" from top of head	2-5/64, 1-3/16	3.130" dia. Head recess .062" deep. VIN "H".
.0015	.200" Up from bottom of head	2-1.50mm, 1-3.00mm	2.675" dia. Head recess .295" deep, (21cc). EFI, OHV, VIN 1. Small Pin. Olds-J Body. Shallow Groove.
.0020	.700" Up from bottom	2-1.50mm, 1-4.00mm	2.57" dia. Head recess .355" deep w/4 valve reliefs. Ford-Probe Turbo. Mazda-Turbo, F2 eng.
.0014	2.08" from top of head	2-1.50mm, 1-4.00mm	2.610" dia head recess .265" deep. Mazda F2 eng.
.0015	.875" up from skirt bottom	2-5/64, 1-3/16	Flat Top w/ 4 valve reliefs. Piston may be used in either Left or Right cyl bank.
.0021	1.98" from top of head	2-1.50mm, 1-4.00mm	2.580" dia. Head recess .020" deep. Mazda 8 valve eng. Ford (1987-89). Mazda (1986-94)
.0015	.500" up from skirt bottom	1-1/16, 1-5/64, 1-3/16	3.10" dia. head recess .140" deep. Replace in full sets only. Not intended for racing. Destroyed .020". Shallow Groove.
.001	2.47" from top of head	2-5/64, 1-3/16	D shaped recessed head .300" deep. 1983-95 LD trk. incl. Fuel injection. 1977-82 LD Trk. will replace circular cup piston in complete sets. 1969-76 LD Trk. from change L16 exc. F100.
.0015	1.10" Up from bottom	2-1.50mm, 1-4.00mm	2.50" dia. Head recess .030" deep with four valve reliefs.
.0020	bottom of skirt	2-1/8, 1-5/32	Model A. Maximum oversize .060".
.0012	above skirt slipper	1-1.75mm, 1-2.00mm, 1-3.00mm	Ricardo Bowl head.
.0015	.900" up from skirt bottom	2-5/64, 1-3/16	3.16" dia. Head recess .08" deep 4 valve reliefs, (13cc). Use 1986 & earlier rings. Chevy-Exc. Special High Performance & 1982 Corvette. Oldsmobile-1992-94 Bravada, Olds, Pontiac, Buick-VIN L.
.0015	.900" up from skirt bottom	2-5/64, 1-3/16	Use w/ ring set # 40664CP, 50664CP
.001	2.43" from top of head	1-1.50mm, 1-1.75mm, 1-4.00mm	2.710" dia head recess, .220" deep. Brazilian eng.
.001	2.23" from top of head	2-5/64, 1-3/16	3.265" dia. Head recess, .067" deep. W/Shallow oil ring groove VIN Code "8".
.0011	.70" Up from bottom	1-1/16, 1-1.75mm, 1-3.5mm	2.42" dia. head recess .295" deep. Trucks. Passenger cars 1988-89. Shallow Groove
.0010	.550" up from skirt bottom	2-1.50mm, 4.00mm	G545B Turbo eng.
.0012	2.47" from top of head	2-5/64, 1-3/16	3.210" dia. Recessed head .300" deep. From Change L16.
.0014	2.38" from top of head	2-1.50mm, 1-4.00mm	Flat Head w/2 valve reliefs. Eng. W/dual spark plug. Up to 1994.



## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat'l*
224-2707	TC2707	8	4.250	108	varies	1.627	3.375	0.9898	71	H
224-2712	TC2712	4	3.3465	85	8.5:1	1.36	2.83	0.8267	72	-
224-2714	-	-	3.030	77	-	1.126	2.323	0.708	-	-
224-2715	-	-	3.030	77	-	1.126	2.323	0.708	-	-
224-2716	-	-	3.190	81	-	1.307	2.46	20mm	-	-
224-2719	TC2719	3	2.913	74	varies	1.114	2.177	17mm	73	-
224-2735	-	-	4.000	101.6	7.6:1	1.64	3.28	0.9751	13	-
224-2736	-	-	3.386	86	8.6:1	36mm	2.795	22mm	-	-
224-2740	TC2740	8	3.9375	100	varies	2.16	4	0.9898	-	-
224-2741	TC2741	8	4.250	108	varies	2.16	3.91	0.9898	75	-
224-2742	TC2742	8	3.1875	81	7.0:1	1.763	3.17	0.7503	22	-
224-2744	-	-	4.250	108	8.2:1	1.634	3.38	0.9897	59	-
224-2745	TC2745	8	4.000	101.6	8.5:1	1.54	3.19	0.9273	76	-
-	TC2745A	6	4.000	101.6	8.5:1	1.54	3.19	0.9273	76	-
224-2746	TC2746	4	3.2260	81.94	9.0:1	1.54	2.72	0.8121	49	-
224-2747	TC2747	8	3.1875	81	7.0:1	1.763	-	0.7503	22	-
224-2751	TC2751.030 TC2751.060	6	3.250	82.6	6.9:1	1.978	3.66	0.8593	1	-
224-2753	-	-	3.1875	81	varies	30.5mm	2.539	20mm	78	-
224-2754	TC2754	4	3.385	86	8.8:1	1.171	2.12	0.8271	3	-
224-2755	TC2755	6	3.700	94	9.0:1	1.31	2.43	0.9054	3	-
224-2756	TC2756	4	3.125	79.4	varies	2.167	3.73	0.8120	1	-
224-2757	TC2757	6	3.504	89	8.8:1	1.45	2.28	0.9054	25	-
224-2758	TC2758	6	3.504	89	8.8:1	1.45	2.28	0.9055	3	-
224-2759	TC2759	6	3.800	96.5	8.5:1	1.366	2.56	0.9054	3	-
224-2761	TC2761	6	3.800	96.52	8.5:1	1.377	-	0.9054	-	H
224-2762	-	-	3.7795	96	-	1.577	2.83	0.9122	-	H
224-2770	TC2770	8	4.000	101.6	8.8:1	1.54	3.2	0.9273	6	-
224-2773	-	-	3.3858	86	8.8:1	1.162	-	0.8267	-	H
224-2774	TC2774	4	3.5039	89	9.0:1	1.17	2	0.8002	3	-
224-2775	TC2775	8	4.250	108	8.75:1	1.627	2.89	0.9898	71	H
224-2777	-	-	4.3620	110.7	8.1:1	2.14	3.59	1.0402	-	H
224-2779	-	-	3.5866	91.1	-	1.395	3.05	0.8662	1	H
224-2781	-	-	3.5866	91.1	-	1.395	3.05	0.8662	-	H
224-2783	TC2783	4	3.4449	87.5	8.9:1	1.35	2.125	0.9009	-	-
224-2788	TC2788	8	4.250	108	8.6:1	1.645	3.21	0.99	-	F
224-2792	TC2792	4	3.4449	87.5	varies	1.35	2.215	0.9009	-	-
224-2795.030	TC2795.030	8	4.000	101.6	-	1.425	2.78	0.928	-	H
224-2797	TC2797	8	3.622	92	9.5:1	1.25	2.31	0.8662	1	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.0020	1.00" up from skirt bottom	2-5/64, 1-3/16	2.00" dia. Head recess .085" deep w/2 valve reliefs. Trk. Eng. Not intended for racing. Destroyed .020".
-	.688" Up from bottom	2-1.50mm, 1-4.00mm	2.50" dia. Head recess .05" deep w/3 valve reliefs. Late Style ring grooves. G63B, 4G63 SOHC eng.
.0015	top of skirt slipper	2-1.22mm, 1-2.82mm	Recessed head. Turbo Spectrum. 4XC1T eng.
.0015	top of skirt slipper	1-1.50mm, 1-2.80mm	Non-turbo. 4XC1 eng.
.0013	.500" up from skirt bottom	1-1.50mm, 1-1.75mm, 1-3.00mm	Offset recessed head. VolksWagon-RD, HT, UM, JN, GX, PF, RV, 2H. Audi-MG, JN.
.0012	3.25" below centerline	1-1.20mm, 1-1.50mm	Recessed head 1.2mm deep w/2 valve reliefs. Geo 1298cc-G13BA eng., Geo 993cc-G10 eng., Suzuki 1324cc-G13A & G13BA eng.
.0025	pin center line	2-5/64, 1-3/16	Recessed head .14" deep. -Optional Low Comp. Piston-(for late 1969-76 After chane L16).
.0015	top of skirt slipper	2-1.50mm, 1-4.00mm	Mazda-F2 8V eng. Kia-FE eng. Recessed head 5.4mm deep, w/3 valve reliefs. The larger Relief is the Intake side.
.0020	1.00" up from skirt bottom	1-3/32, 2-5/64, 1-3/16	3/32" step head propane pop-up piston w/ one valve relief. 1985-90 gas trk. Exc. H5D, not destroyed. Use Early styie rings. Iron Top Groove.
.0025	1.06" Up from bottom	1-3/32, 2-5/64, 1-3/16	Off Center Combustion recess w/ one valve relief. Trk. Eng. Not destroyed. Iron Top Groove.
.0015	bottom of skirt	2-3/32, 2-3/16	Dome head.
.0015	pin center line	2-5/64, 1-3/16	Recessed head .08" deep w/1 valve relief (For 1984-90 engs.). Iron Top Groove.
.0015	.90" Up from bottom	2-5/64, 1-3/16	3.250" dia. Head recess .130" deep w/2 trough valve reliefs. Use w/ring set# 40564CP, 50564CP
.0015	.90" Up from bottom	2-5/64, 1-3/16	3.250" dia. Head recess .130" deep w/2 trough valve reliefs. Shallow Groove.
.0020	pin center line	2-1.50mm, 1-4.00mm	Contoured Head. EFI. Not Destroyed. Shallow Groove.
.0015	.250" up from skirt bottom	2-3/32, 2-3/16	Dome head.
.0015	bottom of skirt	2-3/32, 2-5/32	Plymouth Flat Head
.0008	top of skirt slipper	2-1.50mm, 1-2.80mm	Recessed head 1.2mm deep, with 4 valve reliefs. Chevy Nova 1587cc, 4AGELC, 16V. Toyota Corolla FX, FX16, FX 16 GTS, MR2.
.0015	pin center line	2-1.50mm, 1-3.00mm	2.78" dia. Head recess .142" deep. Non-turbo, J Car, VIN K. Shallow Groove.
.0015	.750" up from skirt bottom	2-1.50mm, 1-3.00mm	2.83" dia. Head recess .123" deep.
.0020	.375" Up form bottom of skirt	2-3/32, 1-3/16	L and F, Flat head. 3 ring piston.
.0016	.20" Up from bottom	2-1.50mm, 1-4.00mm	2.88" dia. Head recess .247" deep. For Aluminum Head applications. Use early style rings.
.0015	.20" Up from bottom	2-1.50mm, 1-4.00mm	2.95" dia head recess .106" deep. Iron Head. TBI. Chevy-APV only. Olds.-Silhouette, VIN D. Isuzu-Rodeo pickup, VIN Z.
.0015	.50" Up from bottom	2-1.50mm, 1-3.00mm	3.10" dia. Head recess .25" deep. Destroyed .020". Shallow Groove. Buick-Riviera, SFI, VIN C. Chevy-Lumina. Olds.-VIN C. Holden-Australian Export.
.001	1.71" from top of head	2-1.50mm, 1-3.00mm	3.050" dia. Head recess .260" deep. VIN C & L. Also 1988-91 Holden 3791cc.
.0015	2.25" from top of head	2-2.00mm, 1-4.76mm	Recessed head w/offset D shaped .095" deep.
.0015	15/16" up from bottom	2-5/64, 1-3/16	Flat Head w/ 4 Valve reliefs, 5.9cc. Truck & Pass. Same as 224-2511 except cast aluminum.
.001	1.83" from top of head	2-1.50mm, 1-3.00mm	2.785" dia. Head recess .130" deep. VIN K.
.0015	bottom of skirt	2-1.50mm, 1-3.00mm	2.94" dia. Head recess .215" deep. Chevy-VIN G 1990-91, 92-94 VIN 4 TBI, EFI.
.0025	.55" Up from bottom	2-5/64, 1-3/16	2.00" dia. Head recess .05" deep w/2valve reliefs. L19 engine. Destoked .020". Shallow Groove. Hypereutectic.
.001	3.00" from top of head	1-3/32, 1-5/64, 1-3/16	Flat head w/2 valve reliefs.
.001	2.30" from top of head	2-1.50mm, 1-4.00mm	Flat head. Mitsubishi-G54B.
.001	2.30" from top of head	2-2.00mm, 1-4.00mm	2.670" dia. Head recess .130" deep. NOT AN O.E. DUPLICATE. Replace in Sets.
.0013	bottom of skirt	2-1.50mm, 1-4.00mm	3.07" dia. Head recess .135" deep w/2 valve reliefs. VIN K. Press Fit Pin. Shallow Groove.
.003	1.26" Up from bottom	2-5/64, 1-3/16	Dome head .095" high w/2 Radius valve reliefs & 1 flat relief. Special High Performance Forged Piston.
-	.50" Up from bottom	2-1.50mm, 1-4.00mm	2.8" dia. Head recess .280" deep w/2 valve reliefs. Turbo. Full floating Pin. Shallow Groove.
.0010	bottom of pin boss	2-5/64, 1-3/16	Flat head w/4 valve reliefs. High Performance Piston. Comes with lockrings.
-	1.7" down from top	2-1.50mm, 1-3.00mm	Flat Head. 273 cid & 298cid - 3534204 & 3526531 sleeve. 298 cid-Non-Turbo. L26 eng.

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat!*
224-2798	-	-	3.6220	92	-	1.627	2.72	0.8661	3	-
224-2800	-	-	3.6220	92	-	1.627	2.72	-	-	-
224-2801	-	-	4.000	101.6	-	1.542	2.72	0.9279	-	H
224-2802	TC2802	6	3.5039	89	8.5:1	1.598	3.05	0.9055	-	-
224-2803	TC2803	6	3.504	89	8.9:1	1.608	2.48	0.9054	25	-
224-2806	-	-	3.8110	96.8	-	1.607	2.607	0.9122	35	H
224-2808	-	-	4.000	101.6	-	1.784	-	0.9122	-	H
224-2810	TC2810	8	4.000	101.6	varies	1.54	2.41	0.9273	11	H
224-2811	TC2811	4	3.385	86	9.2:1	1.171	2.12	0.8266	79	-
224-2812	TC2812	6	3.9535	100.4	9.0:1	1.45	-	0.945	-	H
224-2813	TC2813	8	4.000	101.6	9.0:1	1.6	2.85	0.9122	69	H
224-2814	TC2814	6	3.777	96	varies	1.369	2.22	0.9009	80	-
224-2815	TC2815	6	3.661	93	8.9:1	1.26	2.12	0.9009	80	-
-	TC2816	6	3.4449	87.5	varies	1.328	2.47	0.8271	-	-
224-2817	TC2817	4	3.5827	91	8.8:1	1.368	2.55	0.8665	-	-
224-2831	-	-	3.312	84.1	varies	1.98	3.45	0.8593	1	-
224-2840	TC2840	6	3.562	90.5	7.7:1	2.06	3.5	0.865	1	-
224-2854	-	-	3.750	95.3	7.8:1	2.029	3.72	0.9273	1	-
224-2855	TC2855	6	3.437	87.3	6.9:1	1.978	-	0.8593	1	-
224-2877	TC2877	8	4.094	104	9.6:1	1.747	3.78	0.9898	106	-
224-2880	TC2880	8	4.3600	110.7	8.9:1	1.752	3.248	1.0402	35	H
224-2881	TC2881	4	3.180	81	-	1.203	2.4	0.7082	-	-
224-2882	-	8	3.551	90.2	9.0:1	1.21	-	0.866	-	H
224-2883	-	-	3.4449	87.5	-	1.239	2.519	0.8268	-	-
224-2884	TC2884	6	4.000	101.6	-	1.559	2.425	0.927	-	H
-	TC2885	6	3.779	96	-	1.507	2.43	0.9449	-	-
224-2887	TC2887	4	3.622	92	9.5:1	1.24	2.38	0.8665	69	H
224-2888	-	-	3.800	96.5	varies	1.446	2.62	0.9054	3	-
224-2889	TC2889.020	4	3.228	82	9.3:1	1.165	2.07	0.768	17	H
224-2890	TC2890	4	3.228	82	9.5:1	1.165	2.07	0.768	84	H
224-2891	TC2891	8	4.360	110.7	varies	1.76	3.22	1.04	35	-
224-2892	-	-	2.9724	75.5	varies	1.133	2.28	0.709	60	-
224-2893	TC2893	4	3.1732	80.6	9.0:1	1.32	2.67	0.7485	64	-
224-2894	TC2894	4	2.9528	75	varies	1.103	2.28	0.748	82	-
224-2895	TC2895	3	2.9134	74	varies	1.12	2.18	0.6695	83	-
224-2896	TC2896	6	3.6220	92	varies	1.457	2.28	0.9054	17	-
224-2897	TC2897	8	4.055	103	varies	2.119	3.629	1.22	18	-
224-2898	TC2898	4	3.3465	85	8.8:1	1.324	2.55	0.8665	84	-
224-2899	-	-	2.953	75	9.6:1	1.195	2.37	0.748	-	-
224-2900	TC2900	4	3.517	89.3	8.5:1	39mm	3.16	23mm	3	-
224-2901	TC2901	6	3.625	92	8.3:1	1.858	3.42	0.9122	1	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.0015	2.31" down from top	2-1.50mm, 1-3.00mm	2.940" dia. Head recess .062" deep. Cadillac Allante w/VIN 8.
.0015	2.31" down from top	2-1.50mm, 1-3.00mm	2.940" dia. Head recess .020" deep. Exc. Cadillac Allante.
.0015	1.92" from top of head	2-5/64, 1-3/16	Raised Head .150" deep x 3.260" dia. w/2 valve reliefs. (72-90) Optional for engs. w/68-76cc heads, 305 heads or alum. Corvette heads. (91-96) VIN code "K" w/deep oil ring groove, P3 & G3 series w/Heavy Duty Emmissions. Syclone/Typhoon.
.001	2.36" down from top	2-1.50mm, 1-4.00mm	2.66" dia. head recess .250" deep w/shallow oil ring groove - low tension ring. VIN W.
.0015	.20" Up from bottom	2-1.50mm, 1-4.00mm	2.47" dia. Head recess .27" deep. E.F.I., J Body. Shallow Groove.
.0015	1.75" from top of head	2-1.50mm, 1-4.00mm	Recessed Head .170" deep with S/C eng.
.0015	2.08" from top of head	2-1.50mm, 1-4.00mm	Rectangular Head recess .190" deep. 1993-96 F150 Lightning. 1997 LD Trk.
.0015	.20" Up from bottom	1-2.00mm, 1-1.5mm, 1-4.00mm	Flat Head w/4 valve reliefs. Piston destoked .020". Hyperutectic. Cad.-Brougham. Chevy-Corvette. Pontiac-Firebird.
.0015	.260" Up from bottom	2-1.50mm, 1-3.00mm	2.23" dia. Offset head recess .190" deep, (11cc). Sunbird, non-turbo.
-	.50" Up from bottom	1-1.60mm, 1-1.75mm, 1-3.50mm	2.4" dia. Head recess, .305" deep.
.0015	.60" up from skirt bottom	2-1.50mm, 1-4.00mm	2.45" dia. Head recess .030" deep w/4valve reliefs. High Output. Hypereutectic. Destroked .020". Shallow Groove.
.0015	.20" Up from bottom	2-1.50mm, 1-3.00mm	Oval head recess .192" deep, (16cc). Code L.
.0015	.19" Up from bottom	2-1.50mm, 1-3.00mm	Oval Head recess .09" deep. Eagle-Vision. SEFI, OHC. Chrysler-MEFI, OHC.
.0012	.51" Up from bottom	2-1.50mm, 1-4.00mm	Head recess .124" deep w/2 valve reliefs. 3VZE eng.
.0020	.53" Up from bottom	2-1.50mm, 1-4.00mm	head recess .240" deep. 4YEC engine.
.0020	.250" up from skirt bottom	2-3/32, 2-5/32	Flat head. F6226 engines.
.0015	.375" up from skirt bottom	2-3/32, 1-3/16	Flat head.
.0015	.320" up from skirt bottom	2-3/32, 1-3/16	Flat head. Truck eng.
.0020	bottom of skirt	2-3/32, 2-5/32	Flat Head. Desoto. Chrysler. Dodge trk.
.0015	1.20" up from skirt bottom	2-5/64, 1-3/16	Used in either right or left cylinder bank. 3/16" high crown.
.001	-	2-5/64, 1-3/16	Oblong, recessed head .065" deep. 97cc headstd.=8.9:1, 72cc headstd.=10.7:1, 72cc head.030=10.8:1
.0025	top of skirt slipper	2-1.50mm, 1-2.80mm	Butterfly shaped recessed head. 4AF & 4AFE engs. 4AGEC, 4AGELC. Use with part number 41482.
.0013	.567" Up from bottom	2-1.50mm, 1-3.00mm	.157" Recessed Head. 91-94 (Romeo Engine Only). Press Fit pin only. 10.5cc recess.
.0011	.500" up from skirt bottom	2-1.20mm, 1-3.00mm	Domed w/4 valve reliefs.
.0014	.500" up from skirt bottom	1-2.00mm, 1-1.50mm, 1-4.00mm	Dish recess .073" deep w/4 valve reliefs
.0014	.375" up from skirt bottom	2-1.50mm, 1-3.00mm	Fits Left Hand cyl. Bank ONLY. Replace in Complete sets. Comp. Height does not include .08mm pop up.
.0015	bottom of pin boss	2-1.50mm, 1-3.00mm	2.66" dia. Head recess .150" deep w/4 valve reliefs. Hypereutectic. SOHC. Quad-4 engine, incl. HO. Olds.-Acheiva.
.0015	bottom of pin boss	1-1.20mm, 1-1.50mm, 1-3.00mm	3.10" dia. Head recess .295" deep. Shallow Groove. Buick-VIN L. Except supercharged. Chevy-Lumina APV.
.0015	bottom of pin boss	2-1.50mm, 1-3.00mm	2.00" dia. Head recess .220" deep. VIN 9. Hypereutectic.
.0015	bottom of pin boss	2-1.50mm, 1-3.00mm	DOHC. 2.70" dia. Head recess .110" deep w/2 valve reliefs. Use early stly ring pick. VIN 7, Hyperutectic.
.0020	bottom of pin boss	2-2.00mm, 1-4.00mm	Oval head recess .180" deep w/2 valve reliefs. Screw Type PCV. Truck or Van eng.
.0015	bottom of pin boss	1-1.20mm, 1-1.50mm, 1-3.00mm	2.56" dia. Head recess .02" deep. Colt. 4G15 eng.
.0015	bottom of pin boss	2-1.50mm, 1-4.00mm	.150" dome with 2 valve reliefs. 4G37 eng. Eagle-Talon.
.0010	bottom of pin boss	1-1.20mm, 1-1.50mm, 1-2.80mm	2.346" dia. Head recess .120" deep w/2 valve reliefs. G16KC eng. Exc. California. Geo Tracker, TBI, VIN Q. Suzuki Sidekick G16KC engine, TBI VIN O.
.0013	bottom of pin boss	1-1.2mm, 1-1.5mm, 1-2.8mm	Recessed head w/2 valve reliefs 3 ring piston. Suzuki-G10 eng. Sprint, Mark 1-MS, except LSI. Geo-metro, except LSI, FXI. G10 eng.
-	-	2-1.50mm, 1-4.00mm	2.75" dia. Head recess .080" deep. VIN S. Camaro & Firebird.
.004	0.63" from bottom	1-3.00mm, 1-2.00mm, 1-4.00mm	Flat head with Ricardo recess .158" deep. Hard Anodized Head. Ni Resist Ring Carrier. Diesel Turbo and Non-Turbo, HO.
.0015	bottom of pin boss	2-1.20mm, 1-2.80mm	2.84" dia. Head recess .130" deep w/4 valve reliefs. F22A1 eng. Accord all exc. SE.
.0010	bottom of pin boss	1-1.20mm, 1-1.50mm, 1-2.80mm	Flat head w/4 valve reliefs. D15B1/D15B2/D15B6 Civic, CRX OHC eng.
.0016	bottom of pin boss	2-1.50mm, 1-4.00mm	Recessed head 4.3mm deep. Isuzu-4ZD1 eng.
.0015	.312" up from skirt bottom	2-3/32, 1-3/16	Flat Head.

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat'l*
224-2902	TC2902	4	3.646	92.6	varies	36.5mm	3.09	23mm	73	-
224-2903	TC2903	8	3.625	92	7.8:1	1.76	3.39	0.9122	1	-
224-2904	TC2904	8	3.750	95.3	8.6:1	1.76	3.35	0.9122	1	-
224-2905	TC2905	4	3.4055	86.5	varies	1.37	2.83	0.8267	85	-
-	TC2906	6	3.586	91.1	8.85:1	1.247	2.58	0.8665	87	-
224-2907	TC2907	8	4.000	101.6	varies	1.605	3.24	0.9842	46	-
224-2908	TC2908	8	4.110	104.4	varies	1.95	3.46	1.11	88	-
224-2909	TC2909	4	3.4055	86.5	varies	1.36	-	0.8665	89	-
224-2911	TC2911	-	3.110	79	-	1.102	-	0.7087	-	-
224-2912	TC2912	4	3.1890	81	9.5:1	1.195	2.35	0.7485	60	-
224-2913	TC2913.020	8	3.800	96.5	9.5:1	1.76	3.35	0.9122	1	-
224-2914	TC2914	8	4.250	108	9.0:1	1.627	3.37	0.9898	81	H
224-2915	TC2915	6	3.622	92	9.3:1	1.457	2.27	0.9055	11	-
224-2916	TC2916	4	3.5039	89	9.0:1	1.17	2	0.8002	3	-
224-2917	TC2917	4	3.3900	86	-	1.358	2.8	0.865	-	-
224-2921	TC2921	4	2.992	76	-	29mm	2.126	19mm	-	-
224-2922	TC2922	4	3.5039	89	8.6:1	33.7mm	2.697	21mm	4	-
224-2923	TC2923	4	3.5039	89	8.6:1	34mm	2.677	21mm	3	-
-	TC2924	4	2.9913	74	9.2:1	29.5mm	2.362	19mm	88	-
224-2925	TC2925	4	3.258	82.75	varies	30mm	2.571	20mm	47	-
224-2927	TC2927	4	2.953	75	9.6:1	1.195	2.37	0.748	11	-
224-2928	TC2928	4	3.5157	88	-	1.487	3.15	0.8658	-	-
224-2929	TC2929	6	3.543	90	8.5:1	35.4mm	2.913	23mm	90	-
224-2930	TC2930	4	3.346	85	9.0:1	34.5mm	2.637	21mm	93	-
224-2932	TC2932	4	3.386	86	9.3:1	35mm	2.693	20mm	92	-
224-2933	TC2933	6	3.268	83	9.2:1	33mm	2.795	22mm	95	-
224-2934	TC2934	6	3.268	83	8.4:1	33mm	2.795	22mm	96	-
224-2935	TC2935	6	3.445	87.5	9.0:1	32mm	2.559	21mm	78	-
224-2938	TC2938	4	2.873	73	9.3:1	1.167	2.46	18mm	97	-
224-2940	TC2940	8	4.250	108	9.5:1	1.75	3.74	0.9898	106	-
224-2944	TC2944	6	3.800	96.5	8.5:1	1.805	2.98	0.9398	3	H
-	TC2946	6	3.586	91.1	varies	1.247	2.67	0.8665	87	-
224-2947	TC2947	6	3.661	93	9.3:1	1.51	-	0.9842	1	-
224-2948	TC2948	8	4.000	101.6	varies	1.54	3.2	0.9273	91	H
-	TC2948A	6	4.000	101.6	varies	1.54	3.2	0.9273	91	H
224-2975	TC2975	4	3.339	84.815	-	1.301	-	20.63mm	-	-
224-2976	TC2976	4	3.150	80	9.1:1	1.102	2.441	18mm	11	-
224-2977	TC2977	4	3.2677	83	-	1.203	2.4	0.7871	-	-
224-2978	TC2978	4	3.150	80	-	1.124	2.52	0.7082	-	-
224-2979	TC2979	4	2.953	75	-	1.136	2.18	0.773	-	-
224-2980	TC2980	4	3.240	82.3	-	1.288	2.545	0.8266	-	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.008	bottom of pin boss	2-1.50mm, 1-4.00mm	Recessed head 1.4mm deep. 4ZE1 Isuzu eng.
.015	.531" up from skirt bottom	2-3/32, 1-3/16	Flat Head.
.015	.550" Up from bottom	2-5/64, 1-3/16	Flat Head.
-	-	2-1.50mm, 1-4.00mm	Flat head w/3 valve reliefs. SOHC. Mitsu.- Pickup & Expo. Dodge-RAM 50. Eagle-Summit 1992 116 HP, 1993 136Hp. Dodge Vista, 2351cc.
.015	bottom of pin boss	1-1.20mm, 1-1.50mm, 1-3.00mm	Triangular head recess .105" deep w/2 valve reliefs. 6G72 & SOHC 6G72S engs.
.015	bottom of pin boss	2-1.5mm, 1-4.00mm	Rectangular head recess .070" deep. Trucks. JEEP-Grand Cherokee.
.055	1.00" up from skirt bottom	1-3.00mm, 1-2.00mm, 1-3.50mm	Swirl Chamber. Truck Diesel. Non-Turbo, not destroyed. Iron Top Groove.
-	-	1-1.20mm, 1-1.50mm, 1-2.80mm	Circular 3.10" dia. Head recess .150" deep. 4G64 eng. Mitsu.-1994 E56A Galant, DOHC. Dodge-Vista, Eagle-Summit.
.009	.312" up from skirt bottom	1-1.20mm, 1-1.50mm, 1-3.00mm	Recessed head .153" deep.
-	-	2-1.20mm, 1-2.80mm	Flat head w/2 valve reliefs. 1834cc 4G93 eng. Eagle-Summit, 113HP.
.015	.500" up from skirt bottom	1-5/64, 1-3/32, 1-3/16	Flat Head.
.020	1.00" up from skirt bottom	2-5/64, 1-3/16	Flat head w/2 valve reliefs. Used in either right or left cyl. Banks. Not intended for racing applications. Destroyed .020. Hypereutectic.
.015	.250" up from skirt bottom	2-1.50mm, 1-4.00mm	Flat head w/4 valve reliefs. DOHC. Used in either left or right cylinder bank. Used in sets with early style rings. Pontiac-Grand Prix.
-	-	2-1.50mm, 1-3.00mm	Circular 2.94" dia. Head recess .200" deep. 19cc dish vol. VIN 4. Pass. & trk. Chevy-Also 1993 Lumina. Olds.-Cutlass Ciera. Pontiac-Sunfire.
.010	top of skirt slipper	2-1.50mm, 1-4.00mm	Recessed Head w/3 valve reliefs.
.012	top of skirt slipper	2-1.50mm, 1-2.80mm	Bowl Shaped recess 4.8mm deep.
.012	top of skirt slipper	2-1.50mm, 1-2.80mm	Recessed head 0.6mm deep. KA24E 12V eng.
.008	top of skirt slipper	2-1.50mm, 1-2.80mm	Recessed head 0.5mm deep. KA24E 12V eng.
.012	top of skirt slipper	2-1.2mm, 1-2.8mm	Shaped recessed head, 4.5mm deep with 1 valve relief. SETS ONLY. D15A2 eng.
.012	top of skirt slipper	2-1.50mm, 1-4.00mm	Recessed head 2.3mm deep w/4 valve reliefs. A20A3, BS2, BT engs.
.010	top of skirt slipper	1-1.2mm, 1-1.5mm, 1-2.8mm	Flat head w/4 valve reliefs. D15B1/D15B2/D15B6 Civic, CRX OHC eng.
.018	top of skirt slipper	2-1.50mm, 1-4.00mm	Recessed head. 4ZC1 eng.
.019	top of skirt slipper	2-1.50mm, 1-4.00mm	Recessed Head 3.6mm deep w/3 valve reliefs. JEO6, JEO7, JE, JE39 18V engs. Coated Skirt.
.015	top of skirt slipper	1-1.20mm, 1-1.50mm, 1-3.00mm	Recessed head 2.38mm deep w/4 valve reliefs. 4G63, A , G4CP, DOHC 16V engs.
.022	top of skirt slipper	2-1.50mm, 1-4.00mm	3SFE 16V eng.
.001	top of skirt slipper	2-1.50mm, 1-4.00mm	Special shaped head recess 3.2mm deep w/4 valve reliefs. 7MGE 24V eng.
.015	top of skirt slipper	2-1.50mm, 1-4.00mm	Recessed head 5.8mm deep w/4 valve reliefs. 7MGE 24V eng.
.022	top of skirt slipper	2-1.50mm, 1-3.00mm	Recessed head 2mm deep. W/4 valve reliefs. Toyota-2VZFE 24V eng., (Lexus ES250 1990-91).
.002	top of skirt slipper	2-1.50mm, 1-3.00mm	Special Shaped Head Recess. 3EE Tercel eng.
.015	1.20" Up from bottom	2-5/64, 1-3/16	.140" crown. Used in either left or right cylinder bank
.015	bottom of skirt	2-5/64, 1-3/16	3.05" dia. Head recess .235" deep. Destroyed .020". Non-turbo. VIN A. Hypereut.
.015	.70" Up from bottom	2-1.50mm, 1-4.00mm	Triangular head recess .108" deep w/2 valve reliefs. Chrysler-6G72 eng. Stealth, SOHC. Hyundai-G6AT Sonata, EFI
.020	top of skirt slipper	2-1.50mm, 1-4.00mm	Flat Head. VIN U.
.015	-	2-5/64, 1-3/16	3.14" dia. Head recess .07" deep w/4 valve reliefs, (12cc). Use 1986 & earlier rings. Not intended for racing applications. Destroyed .020" Hypereutectic. GMC Trk.-Deep Groove.
.015	.90" Up from bottom	2-5/64, 1-3/16	3.14" dia. Head recess .07" deep w/4 valve reliefs, (12cc). Use 1986 & earlier rings. Not intended for racing applications. Destroyed .020" Hypereutectic. GMC Trk.-Deep Groove.
.012	.394" from bottom	1-1.50mm, 1-1.75mm, 1-3.00mm	Dome head 1.26mm high, with vavle reliefs, 2 are 5.23mm deep, and one is 6.47mm deep.
.028	top of skirt slipper	2-1.20mm, 1-3.00mm	Flat Head w/ 4 valve reliefs. RF 12V Geo Storm eng. Isuzu Stylus 4XE1 12V eng.
.012	top of skirt slipper	2-1.50mm, 1-3.00mm	Raised head with 4 valve reliefs.
.013	top of skirt slipper	2-1.20mm, 1-3.00mm	Raised head w/ 4 valve reliefs.
.012	top of skirt slipper	1-1.20mm, 1-1.50mm, 1-2.80mm	Recessed head w/4 valve reliefs in recess.
.012	top of skirt slipper	1-1.20mm, 1-1.50mm, 1-3.00mm	Raised head with 4 valve reliefs.

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat'l*
224-2981	TC2981	4	2.953	75	-	1.149	2.335	0.748	-	-
224-2982	TC2982	4	3.622	92	-	1.442	2.93	0.9045	-	-
224-2983	TC2983	4	2.992	76	-	1.154	2.12	0.748	-	-
224-2984	TC2984	4	3.385	86	-	1.261	2.48	0.8658	1	-
224-2985	TC2985	4	3.504	89	-	1.323	2.67	0.8264	-	-
224-2986	TC2986	4	3.425	87	-	1.283	2.48	0.866	-	-
224-2987	TC2987	4	2.953	75	-	1.183	2.365	0.7476	-	-
224-2988	TC2988	4	3.346	85	-	1.373	2.63	0.826	-	-
224-2989	TC2989	4	3.189	81	-	1.198	2.54	0.7875	-	-
224-2990	TC2990	8	4.050	102.9	7.2:1	1.882	3.88	0.9752	39	-
224-2991	TC2991	8	3.8976	98.999	-	1.339	-	0.945	1	-
224-2992	TC2992	8	4.000	101.6	varies	1.605	3.35	0.9122	42	H
224-3050	TC3050	4	3.405	86.5	8.5:1	35.00mm	2.811	21mm	101	-
-	TC3056	8	4.000	101.6	7.5:1	1.57	3.27	0.9273	102	-
-	TC3057	8	3.800	96.5	8.0:1	1.605	3.6	0.9805	103	-
224-3058	TC3058	4	2.953	75	9.2:1	30mm	2.402	19mm	11	-
224-3061	TC3061	6	4.130	104.9	10.3:1	1.66	-	0.9752	15	-
224-3062	TC3062	8	4.000	101.6	8.5:1	1.635	3.24	0.9122	104	-
224-3064	TC3064	6	3.6614	93	varies	1.535	2.89	0.9450	1	-
224-3065	TC3065	4	3.7795	96	8.7:1	1.578	2.98	0.9122	8	-
224-3066	TC3066	8	4.000	101.6	9.0:1	1.576	3.16	0.9842	1	-
-	TC3072	4	4.000	101.6	8.2:1	1.57	3.26	0.9273	3	-
224-3075	TC3075	8	4.300	109	8.5:1	2.004	3.76	0.9997	26	-
224-3076	TC3076	8	4.300	109	8.5:1	1.883	3.28	0.9997	26	-
224-3078	TC3078	8	3.6614	93	10.3:1	1.25	-	0.8665	11	-
224-3079	TC3079	8	4.050	102.9	7.2:1	1.76	4.167	0.9752	39	-
224-3082	TC3082	6	4.000	101.6	varies	1.778	3.17	0.9752	-	H
224-3086	TC3086.030	6	3.3125	84.1	varies	2	-	0.8593	1	-
224-3089	TC3089	4	3.622	92	varies	35mm	2.52	22mm	60	-
224-3097	TC3097	8	4.360	110.7	8.1:1	1.772	3.74	1.040	35	H
224-3098	TC3098	6	4.000	101.6	8.3:1	1.778	3.17	0.9752	-	H
224-3099	TC3099	8	3.551	90.2	varies	1.2	2.19	0.8665	4	H
224-3101	TC3101	8	3.937	100	varies	2.16	3.41	0.9898	-	H
224-3107	-	4	3.875	98.4	4.2:1	1.906	-	0.9997	1	-
224-3108	TC3108	4	3.1732	80.6	8.2:1	1.455	-	0.8662	-	-
224-3110	TC3110	4	3.779	96	varies	46.40mm	3.007	24mm	1	-
224-3118	TC3118	6	3.267	83	8.9:1	38mm	2.559	20mm	3	-
224-3120	TC3120	4	3.425	87	8.5:1	35.50mm	2.397	21mm	47	-
224-3123	TC3123	6	3.875	98.4	7.2:1	1.935	3.62	0.9273	19	-
224-3129	TC3129	4	3.228	82	varies	1.474	2.68	0.9055	1	-
224-3132	TC3132	8	3.500	88.9	9.6:1	1.843	3.03	0.8750	3	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.0012	top of skirt slipper	1-1.20mm, 1-1.50mm, 1-2.80mm	Recessed head w/4 valve reliefs in recess.
.0012	top of skirt slipper	2-1.50mm, 1-4.00mm	Concave head.
.0012	top of skirt slipper	2-1.50mm, 1-2.80mm	Concave head.
.0012	top of skirt slipper	2-1.50mm, 1-3.00mm	Flat Head.
.0012	top of skirt slipper	2-1.50mm, 1-2.80mm	Concave head.
.0012	top of skirt slipper	2-1.50mm, 1-4.00mm	Recessed head w/4 valve reliefs.
.0012	top of skirt slipper	1-1.20mm, 1-1.50mm, 1-2.80mm	Raised head w/ 4 valve reliefs.
.0008	top of skirt slipper	1-1.20mm, 1-1.50mm, 1-3.00mm	Recessed head w/4 valve reliefs in recess. Turbo 4G63 eng.
.0012	.375" up from skirt bottom	1-1.20mm, 1-1.50mm, 1-2.80mm	Raised head w/4 valve reliefs.
.0020	.875" Up from bottom	1-3/32, 1-5/64, 1-3/16	2.6" dia. Head recess .17" deep. 359/361 Trk. Eng. After Engine U40000. 3 rings.
.001	.400" from bottom	2-1.50mm, 1-3.00mm	Flat head w/ reliefs
.0015	1.100" Up from bottom	2-5/64, 1-3/16	Flat top w/4 valve reliefs. Not intended for racing applications. Hypereutectic, not destroyed.
.0012	-	2-1.50mm, 1-4.00mm	Recessed head .38mm deep w/ 3 valve reliefs. Hyundai Sonata G4CS eng., Mitsu-Expo 4G84 8V eng., Mitsu-Galant & Van G64B eng., Chrysler-Colt Vista T & 4G64 eng., Chrysler-RAM 50, Power Ram 50 pickup T & 4G64 eng.
.0015	Bottom of pin boss	2-5/64, 1-3/16	LU8 eng., Turbo. Shallow Groove. Right & Left cyl. Bank set.
.0015	Bottom of pin boss	2-5/64, 1-3/16	Recessed head .270" deep. Left and right cyl. Bank set.
.0008	-	1-1.20mm, 1-1.50mm, 1-2.80mm	Flat head w/ 4 valve reliefs. D15B1 16V Civic eng.
.0015	Bottom of pin boss	2-5/64, 1-3/16	2.593' dia. Head recess .125" deep w/4 valve reliefs. Pin I.D. .70" Cobra Jet.
.0015	Bottom of pin boss	2-5/64, 1-3/16	Flat head with 2 angled valve reliefs. Cleveland eng.
.0015	Bottom of pin boss	1-2.0mm, 1-2.5mm, 1-4.00mm	Flat head. Capri, Mustang II (1976-79), Ranger (1983-85)
.0015	Bottom of pin boss	2-1.5mm, 1-4.00mm	Flat Head w/2 valve reliefs. Shallow Groove.
.0015	Bottom of pin boss	2-5/64, 1-3/16	Flat head.
.0025	Bottom of pin boss	2-5/64, 1-3/16	3.02" dia. Head recess .226" deep. Replace in full sets only. Chevy-Citation. Buick-Skylark.
.0010	Bottom of pin boss	2-5/64, 1-3/16	Rectangular head recess .380" deep.
.0010	Bottom of pin boss	2-5/64, 1-3/16	Head recess 13/32" deep. 50cc dish.
-	-	2-1.5mm, 1-3.00mm	Flat head w/4 valve reliefs. Cadillac North Star System. Chevy-Camaro Z28. Cad.-VIN 9 and Y. L37 eng. 270 and 295 HP.
.0020	Bottom of pin boss	1-3/32, 2-5/64, 1-3/16	3" dia. Head recess .31" deep. Iron Top Groove. Can be replaced by 224-2004. Truck eng., not destroyed.
.0015	Bottom of pin boss	2-5/64, 1-3/16	2.7" dia. Head recess .215" deep. Hypereutectic. Special Heavy UPS type service.
.0015	Bottom of pin boss	1-5/64, 2-3/32, 1-1/4	F226 & F227 engines. Flat Head.
.0015	-	2-1.50mm, 1-4.00mm	Recessed Head 2.2mm deep w/1 valve relief.
.0015	Bottom of pin boss	2-5/64, 1-3/16	.240" deep w/2 valve reliefs. Car & trk. Non-EFI. Hypereutectic, not destroyed.
.0015	Bottom of pin boss	2-5/64, 1-3/16	3.0" dia. Head recess .240" deep. Hypereutectic Special step quench head for heavy UPS type service.
.0015	Bottom of pin boss	2-1.5mm, 1-3.00mm	2.70" dia. Head recess .157" deep. Destroyed .020". Hypereutectic, SOHC. Press Fit pin.
.0020	Bottom of pin boss	1-3/32, 2-5/64, 1-3/16	.95' Dome with one valve relief. Except H5D. Not destroyed. Shallow Groove.
.0020	Bottom of pin boss	2-5/64, 1-3/16	Flat head. Model A.
-	-	1-1.75mm, 1-2.00mm, 1-4.00mm	.170" Recessed head w/1 valve relief. Peugeot E82 eng.
.0004	3.25" below centerline	1-1.75mm, 1-2.00mm, 1-4.00mm	Flat Head. Volvo 2316cc
.0004	3.25" below centerline	2-1.50mm, 1-4.00mm	Recessed head 0.8mm deep. 7/1981-1984 Maxima 6 cyl. L24E eng.
.0012	3.25" below centerline	2-1.50mm, 1-4.00mm	Z22, Z22E 200SX, 720 engs.
.0025	Bottom of pin boss	2-3/32, 1-3/16	Head recess .234" deep. Trk. Engine. Low compression export piston.
.0010	Bottom of pin boss	2-2.0mm, 1-4.00mm	Flat Head. For Brazilian Expot.
.0015	Bottom of pin boss	2-5/64, 1-3/16	2.68" dia. Head recess by .091" deep. High comp. Land Rover & Triumph also.



## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

New CEP Number	TC Number	Set Qty.	Bore (in.)	Bore (mm)	Comp. Ratio	Comp. Height	Piston Length	Pin Diameter	Head Config.	Mat'l*
224-3133	TC3133	4	3.622	92	9.0:1	1.536	3.64	0.8665	-	H
224-3134	TC3134	4	2.9134	74	8.2:1	1.1	2.181	0.6692	86	-
224-3163	TC3163	8	4.110	104.4	varies	2.142	3.789	1.3085	-	-
224-3173	TC3173	8	4.125	104.8	varies	1.747	3.72	0.9898	106	-
224-3174	TC3174	4	3.586	91.1	8.2:1	1.365	3.02	0.8665	3	H
224-3175	TC3175	6	4.000	101.6	varies	1.54	2.42	0.9273	91	H
-	TC3175A	8	4.000	101.6	varies	1.54	2.42	0.9273	91	H
224-3176	TC3176	6	3.800	96.5	-	1.446	-	0.9054	3	H
224-3177	TC3177	6	4.000	101.6	8.7:1	1.78	3.38	0.9752	13	-
224-3178	TC3178	4	3.586	91.1	8.2:1	1.418	3.07	0.8665	1	-
224-3179	TC3179	4	3.425	87	varies	1.438	3.13	0.8665	1	-
224-3180	TC3180	8	4.360	110.7	varies	1.76	3.27	1.04	35	-
224-3181	TC3181	4	3.5039	89	9.0:1	1.17	-	0.8002	16	H
224-3183	TC3183	8	4.110	104.394	-	1.95	3.46	1.3085	-	-
224-3184	TC3184	8	3.910	99.314	-	1.73	3.435	0.984	1	-
224-3287	TC3287	4	3.4375	87.3	varies	1.998	-	0.8593	1	-
224-3401	TC3401	4	3.6220	92	7.5:1	1.355	2.49	0.8665	-	-
224-3402	TC3402	8	4.000	101.6	9.1:1	1.54	2.42	0.9273	91	H
-	TC3402A	6	4.000	101.6	9.1:1	1.54	2.42	0.9273	91	H
224-3403	TC3403	8	4.054	102.981	-	2.109	3.619	1.22	-	H
224-3404	TC3404	6	3.8122	96.83	9.3:1	1.255	2.55	0.9054	-	H
224-3405	TC3405	4	3.445	87.5	9.8:1	1.23	2.52	0.8267	-	-
224-3406	TC3406	6	3.38	86	-	1.222	2.0965	0.8662	1	H
224-3407	TC3407	6	3.7992	96.5	9.2:1	1.09	2.09	0.8662	17	H
224-3408	TC3408	6	3.9100	99.3	9.0:1	1.741	3.43	0.9842	1	H
224-3409	224-3409	8	4.110	104.4	varies	2.132	3.619	1.3085	-	-
224-3410	TC3410	8	4.110	104.4	-	2.14	3.778	1.306	-	-
224-3411	TC3411	6	3.5039	89.0	9.5:1	1.476	2.304	0.9054	-	-
224-3412	TC3412	6	3.6220	92.0	9.5:1	1.47	2.462	0.9054	-	-
224-3413	TC3413	8	3.552	90.2	-	1.216	2.036	0.866	3	-
224-3414	TC3414	8	3.552	90.2	9.0:1	1.223	2.048	0.864	3	-
-	TC3414A	10	3.552	90.2	9.0:1	1.223	2.048	0.864	3	-
224-3417	TC3417	8	3.552	90.2	-	1.246	2.049	0.862	3	-
224-3418	TC3418	8	3.552	90.2	-	1.2215	2.04	0.863	3	-
-	TC3418A	10	3.552	90.2	-	1.2215	2.04	0.863	3	-

## PISTON NUMERICAL SPECIFICATIONS - AUTOMOTIVE & LIGHT TRUCK

Min. Skirt Clearance	Measure Skirt Clearance at	Rings	Notes
.0015	Bottom of pin boss	1-2.00mm, 1-2.5mm, 1-4.00mm	Crown .25" high & 2.30" dia. Head recess .20" deep. 22R engine., not destroyed
.0012	-	1-1.20mm, 1-1.50mm, 1-2.80mm	Recessed Head w/2 valve reliefs.
.0055	.850" from bottom	1-3.00mm, 1-2.00mm, 1-3.50mm	Recessed "Reentrant Bowl type" combustion bowl .67" deep. Powerstroke Direct Injection Turbo Diesel. Ni Resist Ring Carrier.
.0015	Bottom of pin boss	2-5/64, 1-3/16	396 cid-Used in either left or right cylinder bank. .132" hi crown. Use Std. Oversize for .030 o/s 396 application. Not destroyed. 402 cid-Big Block 132" crown. Used in either left or right cyl. Bank. Not Destroyed.
.0015	Bottom of pin boss	2-1.5mm, 1-4.0mm	1976-1987 Non-Turbo. 1984-1987 EFI. 1984-1989 Turbo. F and W engs. 2.75" dia. Head recess .200" deep. Destroyed .010"
.0015	Bottom of pin boss	1-2.0mm, 1-1.5mm, 1-4.0mm	3.10" dia. Head recess .80" deep w/4 valve reliefs. LT. WT. For VIN W 1995-1998, 1996-1997 VIN X, & 1995-1996 VIN Z stamped AA. Destroyed .020". Shallow Groove.
.0015	Bottom of pin boss	1-2.0mm, 1-1.5mm, 1-4.0mm	3.10" dia. Head recess .80" deep w/4 valve reliefs. Destroyed .020". Shallow Groove.
.0015	Bottom of pin boss	1-1.2mm, 1-1.5mm, 1-3.0mm	3.10" dia. Head recess .295" deep. VIN L. Except Supercharged. Shallow Groove.
4.000	Bottom of pin boss	2-5/64, 1-3/16	3.125" dia. "D" shaped recess .300" deep. VIN Y. Trk. Eng, EFI, Destroyed .010"
.0015	Bottom of pin boss	2-1.5mm, 1-4.0mm	Flat Head, non-turbo w/carb. To 1-19-1989.
.0015	Bottom of pin boss	2-2.0mm, 1-4.0mm	Chevy- S10 pickup with LR1 eng. 22mm pin. ISUZU-G200Z Eng. Trooper II & pickup. BOTH-Flat head. Use 1982 ring pack for all years. 22MM pin.
.0015	Bottom of pin boss	2-5/64, 1-3/16	Oblong head recess .072" deep w/2valve reliefs. EFI, VIN G.
-	Bottom of pin boss	2-1.50mm, 1-3.00mm	VIN 4. Circular 2.94" dea. Head recess .200" deep. 19cc dish vol.
.006	1.00" from bottom	1-3.00mm, 1-2.00mm, 1-3.50mm	Flat top w/6.7cc Ricardo Cup, Ni Resist ring carrier.Hard Anodized Crown. Factory Indirect Injection Turbo Diesel, Big Pin.
.0010	1.00" Up from bottom	2-5/64, 1-3/16	Flat Top.
.0020	Bottom of pin boss	1-5/64, 2-3/32, 1-1/4	F6226 & F245 engines. Flat Head.
.0025	Bottom of pin boss	2-1.50mm, 1-4.00mm	22RTEC Turbo SOHC eng. 4-Runner & Pickup. 2.900" dia. Head recess .218" deep w/2 valve reliefs.
.0015	Bottom of pin boss	2-1.50mm, 1-3.00mm	3.100" Dia. Head recess .080" deep w/4 Valve Reliefs. VIN "W" & "Z" -262 CID. VIN "K" (L36) & "R" (L31) -350 CID. Shallow Groove. Not intended for Racing Applications. For use with ring set 41785
.0015	Bottom of pin boss	2-1.50mm, 1-3.00mm	3.100" Dia. Head recess .080" deep w/4 Valve Reliefs. VIN "W" & "Z" -262 CID. VIN "K" & "R"-350 CID. Shallow Groove. Not intended for Racing Applications. For use with ring set 41786
.004	.63" from bottom	1-3.00mm, 2-2.00MM, 1-4.00mm	Ricardo Bowl Head .148" Deep. Ni-Resist Ring Carrier. Reduced Compression Height by .010" to allow for block milling.
.0017	Bottom of pin boss	2-1.50mm, 1-3.00mm	Oblong Head Recess .150" Deep. Use w/ Ring set# 41732
.0010	-	2-1.20mm, 1-3.00mm	2.600" Dia. Head recess .015" deep. SOHC. VIN "C" & "N".
.0018	1.66" Down from top	2-1.50mm, 1-3.00mm	Flat Top. Coated Piston Skirt. Use w/ring set# 41855CP.
.0015	-	1-1.20mm, 1-1.50mm, 1-2.00mm	2.860" dia. Recessed Head, .05" Deep. V IN "K". Not intended for racing applications. Use w/ Ring Set# 41847CP.
-	-	2-2.00mm, 1-4.00mm,	Flat Head. Shallow Groove. Use w/Ring set# 41708
.0055	.850" from bottom	1-3.00mm, 1-2.00mm, 1-3.50mm	Recessed "Reentrant Bowl type" combustion bowl .67" deep. Powerstroke Direct Injection Turbo Diesel. Ni Resist Ring Carrier. Same as 2243163 except Reduced Compression distance by .010" to allow for deck milling.
.0067	.850 up from bottom	1-3.00mm, 1-2.00mm, 1-3.45mm	Recessed "Reentrant Bowl type" combustion bowl. Keystone Top Ring. 2nd Groove is a gas accumulator ring. Free Floating pin (comes with Lockrings).
-	-	1-1.20mm, 1-1.50mm, 1-3.00mm	2.825" dia. Head recess .258" deep. Coated Skirt. Shallow Groove. VIN "M" & "K".
-	-	1-1.20mm, 1-1.50mm, 1-4.00mm	3.140" dia. Head recess .270" deep. Coated Skirt. Vin "E", LA1 eng.
.0014	.354 from bottom	2-1.50mm, 1-3.00mm	2.931" Dia. Recessed Head X .193" deep. Shallow Top Groove .131". Coated Skirt. Use with ring set# 41546.
.0014	.354 from bottom	2-1.50mm, 1-3.00mm	Recessed Head 2.701" dia. X .063" deep. Free Floating pin (comes with Lockrings). Coated Skirt. SOHC NPI.
.0014	.354 from bottom	2-1.50mm, 1-3.00mm	Recessed Head 2.701" dia. X .063" deep. Free Floating pin (comes with Lockrings). Coated Skirt. SOHC NPI.
.0014	.354 from bottom	2-1.50mm, 1-3.00mm	2.642" dia. Recessed head X .162". Coated Skirt. Shallow Top Groove .131". Use w/ring set# 41546
.0014	.354 from bottom	2-1.500mm, 1-3.00mm	2.951" Dia Recessed Head X .132" deep. Coated Skirt. Use with ring set# 41787 (8pk.).
.0014	.354 from bottom	2-1.500mm, 1-3.00mm	2.951" Dia Recessed Head X .132" deep. Coated Skirt. Use with ring set# 41788 (10pk.)

## PISTON NUMERICAL SPECIFICATIONS-HEAVY DUTY

Part No.	Bore	No. Cyl.	Length	Comp. Dist.	Rings Comp.	Rings Oil	Pin	Pin O.D.
224-1020	3.9	4	4.1406	2.075	2-3/32	1-3/16	223-1854	.9122
224-1039	4.5	4	6.4375	4.000	1-1/8	2-1/4		1.500
224-1048	3-5/8	4	4.250	2.500	3-3/32	1-1/4		.875
224-1313	3-3/8	4	3.560	1.938	2-1/8	1-1/4		.859
224-1344	4.5	8	4.324	2.422	3-3/32	1-3/16		1.220
224-1386	4	6	5.310	3.125	2-3/32	1-1/4		1.313
224-1401	4-1/8	4	4.3125	2.375	1-3/32, 2-1/8	1-3/16		
224-1401	4-1/8	4	4.3125	2.375	1-3/32, 2-1/8	1-3/16	223-1931	.9894
224-1402	3-7/16	4	4.4375	2.500	2-3/32, 1-1/8	1-1/4	223-1857	1.109
224-1404	3-1/8	4	3.500	1.750	3-1/8	1-1/4	223-1930	.919
224-1425	4-1/8	4	5.07813	3.125	3-3/32	1-1/4		1.000
224-1426	3-9/16	6	4.0781	2.328	2-3/32	1-1/4	223-1862	.8749
224-1427	3-9/16	6	3.5468	1.796	2-3/32	1-1/4	223-1903	.8749
224-1429	4	4	5.120	3.124	3-3/32	1-1/4		1.310
224-1430	3-5/8	4	4.250	2.500	3-3/32	1-1/4		.875
224-1431	3-7/16	4	4.250	2.498	3-3/32	1-1/4		1.109
224-1432	3-9/16	4	4.250	2.500	3-3/32	1-1/4		1.109
224-1438	4.375	6	4.500	2.3175	2-3/32	1-3/16	223-1659	1.109
224-1444.045	4-1/4	2	4.09375	2.242	3-3/32	1-1/4	223-1866	1.1878
224-1451	3.9	4	4.1875	2.125	3-3/32	2-3/16	223-1872	1.2492
224-1457	3-13/16	4	4.2812	2.400	1-1/8, 1-3/32	1-3/16	223-1882	1.2498
224-1459	3.500	4	3.437	2.000	3-3/32	1-1/4		.999
224-1463	4-3/8	4-6	5.250	2.8725	3-3/32	1-1/4	223-1905	1.4994
224-1475	4	4	4.500	2.527	3-1/8	1-3/16		.989
224-1476	3-9/16	4-6	4.1406	2.271	3-3/32	2-3/16	223-1869	.9997
224-1509	3-1/4	4	3.360	1.625	2-3/32	1-3/16	223-1873	.8592
224-1510	3-11/16	6	4.1406	2.388	2-1/8	1-1/4		1.1248
224-1511	3-11/16	4-6	3.7812	2.036	2-1/8	1-1/4		1.1248
224-1538	5-1/8	4-6-12	6.260	4.0125	3-5/32	1-1/4	223-1842	1.9989
224-1549	3-5/8	4-6	4.000	2.250	3-3/32	1-3/16		1.1878
224-1552	4	4-6	4.630	2.704	3-3/32	2-1/4		1.2500
224-1560	4-5/8	4-6	5.500	2.8400	3-3/32	1-3/16	223-1871	1.2499
224-1561	4-5/8	4-6	5.0625	2.750	3-3/32	1-3/16	223-1876	1.4999
224-1563	3.438	4	3.550	1.984	3-1/8	1-1/4		.8597
224-1611	3-3/16	4-6	3.562	2.000	3-1/8	1-3/16		.850
224-1630	5.25	6	6.750	3.753	3-1/8	1/1/4		1.750
224-1631	4-1/8	4	4.812	2.719	3-3/32	1-1/4		1.350
224-1643	97mm	3-4-6			2-3/32, 1-1/8	2-1/4		
224-1646	4-1/8	4-6	5.250	2.875	3-3/32	1-1/4	223-1858	1.3585
224-1649	3.6	3-4	4.2343	2.236	3-2/32	2-1/4		
224-1672	3.562	6	3.938	1.930	3-1/8	1-3/16		1.000
224-1676	4-1/4	6	5.8125	3.144	1-3/32, 2-1/8	1-1/4	223-1889	1.5012
224-1680	4-1/4	6	4.625	2.652	3-3/32	1-1/4	223-1879	1.2500
224-1766	3-7/16	4-6	3.9375	2.072	3-1/8	1-3/16	223-1884	.9996
224-1768	5-1/8	6	6.250	4.013	1-1/8	1-3/16		1.990
224-1777	3.655	4	3.723	2.160	3-3/32	1-3/16		1.000
224-1838	3-3/8	4	3.570	1.835	3-1/8	1-3/16	223-1895	.8592
224-1859	4-7/8	6	5.610	3.698	3-1/8	1-3/16	223-1834	1.9988
224-1893	4.4	3-6	4.999	2.682	1-1/8	1-3/16		1.500
224-1897	3.6	3-4	4.310	2.431	23/32, 1-1/8	2-1/4		1.250
224-1897	3.6	3	4.310	2.431	2-3/32, 1-1/8	2-1/4		1.250
224-1899	4.4	3	4.840	2.520	2-3/32	1-3/16		1.500
224-1900	4.4	4	4.990	2.661	2-3/32	1-3/16		1.500
224-1901	4.2	3	5.250	2.939	2-3/32	1-3/16	223-1894	1.4999
224-1902	4.13	4	5.060	2.738	2-3/32	1-3/16		1.500
224-1903	4.2	3-4	5.080	2.7605	3-3/32	1-3/16		1.500

## PISTON NUMERICAL SPECIFICATIONS-HEAVY DUTY

Part No.	Bore	No. Cyl.	Length	Comp. Dist.	Rings Comp.	Rings Oil	Pin	Pin O.D.
224-1904	3-7/8	4	4.750	2.749	3-3/32	2-1/4		1.375
224-1904	3-7/8	4	4.750	2.749	3-3/32	2-1/4		1.375
224-1922	4-7/8	6	6.4531	3.698	2-1/8, 1-3/32	1-3/16	223-1890	1.8743
224-1927	4-1 2	8	3.670	2.318	1-1/8	1-7/64		1.500
224-1927X	4-1/2	8	3.670	2.318	1-1/8	1-7/64	223-1836	1.4999
224-1932	3 7/8	6	4.750	2.742	1-1/8, 2-3/32	1-1/4		1.4998
224-2023	3.86	3-4	3.750	2.135	2-3/32	1-1.197	223-1900	1.1878
224-2024	4.02	6	4.380	2.609	1-1/8, 1-3/32	1-5.0mm	223-1901	1.375
224-2025	4.02	3-4-6	4.0625	2.254	1-1/8, 1-3/32	1-5.0mm	223-1899	1.1877
224-2026	3.86	4-6	4.000	2.2535	2-3/32	1-1.197	223-1900	1.1878
224-2027	4.3	6	5.020	3.6985	2-1/8	1-1/4	223-1906	1.6249
224-2028	4.3	6	5.020	3.3995	2-1/8	1-1/4	223-1906	1.6249
224-2029	4.3	6	5.020	3.5745	2-1/8	1-1/4	223-1906	1.6249
224-2030	4-3/8	6	5.260	2.883	2-1/8	1-3/16		1.6245
224-2031	4-1/2	8	4.8906	2.941	1-1/8, 1-3/32	1-1/4	223-1897	1.6249
224-2068	3.75	4	3.340	1.962	3-.0965	1-.189		.930
224-2091	5-1/2	8	3.900	2.570	1-5/32, 1-1/8	1-3/16	223-1823	1.7489
224-2103	4.3	6	5.010	3.704	1-1/8, 1-3/32	1-1/4	223-1906	1.6249
224-2110	3.267	4	3.760	1.9094	3-.0787	2-.1969		.9483
224-2112	4-1/4	6	4.900	2.749	2-5/32	1-3/16	223-1891	1.6251
224-2121	3.5	4	3.340	1.965	4-3/32	1-3/16		.937
224-2124	4-5/8	6-8	3.950	2.2475	1-1/8, 1-3/32	1-7/64	223-1898	1.3739
224-2140	4-1/4	6	4.890	2.7495	2-5/32	1-3/16	223-1891	1.6251
224-2143	5-1/2	6	6.275	4.015	1-5/32	1-3/16	223-1826	1.9989
224-2144	5-1/2	6	6.260	4.000	1-5/32	1-3/16	223-1826	1.9989
224-2160	4	4	4.250	2.396	1-1/8, 1-3/32	1-3/16	223-1882	1.2490
224-2168	4.56	6	4.920	2.766	2-5/32	1-3/16	223-1914	1.8742
224-2169	4.56	6	4.930	2.778	1-5/32, 1-3/32	1-3/16	223-1891	1.6251
224-2170	4-1/8	4-6	5.270	2.8925	2-3/32	1-1/4	223-1912	1.4994
224-2171	4-5/8	4-6	5.250	3.375	2-1/8	1-3/16	223-1909	1.7995
224-2172	4-5/8	4-6	5.250	3.3825	1-1/8, 1-3/32	1-1/4	223-1909	1.799
224-2174	4.625	6	5.259	2.880	2-1/8	1-3/16		1.625
224-2175	4.125	4	5.250	2.875	3-3/32	1-1/4		1.500
224-2176	4-5/8	4-6	5.260	2.894	2-3/32	1-3/16		1.6249
224-2186	4.19	4-6	4.900	2.820	1-1/8, 1-3/32	1-9/64	223-1916	1.625
224-2188	4.5	8	3.670	2.319	1-1/8	1-7/64	223-1836	1.500
224-2188X	4-1/2	8	3.670	2.318	1-1/8	1-7/64	223-1836	1.5006
224-2190	4	8	3.460	1.9445	2-5/64	1-7/64	223-1920	1.110
224-2191	4.19	4	4.890	2.820	1-1/8, 1-3/32	1-9/64	223-1901	1.375
224-2193	3.5625	6	4.125	2.375	2-3/32	1-1/4		.875
224-2194	3-9/16	6	3.7812	2.024	2-3/32	1-1/4	223-1903	.8749
224-2195	3-3/4	6	3.774	2.024	1-1/8, 1-3/32	1-1/4	223-1903	.8749
224-2197	5-1/2	6	6.290	4.029	1-5/32	1-3/16	223-1826	1.9989
224-2200	4-7/8	6	5.600	3.698	3-1/8	1-3/16	223-1834	1.998
224-2201	4-7/8	6	5.600	3.698	3-1/8	1-3/16	223-1834	1.998
224-2202	4-7/8	6	5.600	3.698	3-1/8	1-3/16	223-1834	1.998
224-2228	4.5	8	3.670	2.320	1-1/8	1-7/64		1.500
224-2229	4-5/8	6	5.250	3.375	2-1/8	1-3/16	223-1909	1.7995
224-2236	4.56	6	4.920	2.770	2-5/32	1-3/16	223-1914	1.8742
224-2239	4.56	6	4.920	2.770	2-5/32	1-3/16	223-1914	1.8742
224-2240	5-1/16	6	5.960	3.537	3-3/32	1-3/16		1.7496
224-2243	4-3/4	6	5.560	3.250	2-5/32	1-3/16	223-1917	1.8745
224-2244	4.4	6	4.988	2.670	2-3/32	1-3/16		1.625
224-2245	4-3/4	6	5.560	3.250	2-5/32	1-3/16	223-1917	1.8742
224-2246	4.19	6	4.650	2.820	1-1/8, 1-3/32	1-9/64	223-1916	1.625
224-2251	4-1/4	8	3.980	2.366	1-1/8, 1-3/32	1-3/16	223-1918	1.4961

## PISTON NUMERICAL SPECIFICATIONS-HEAVY DUTY

Part No.	Bore	No. Cyl.	Length	Comp. Dist.	Rings Comp.	Rings Oil	Pin	Pin O.D.
224-2252	4-1/4	8	3.980	2.366	2-3/32	1-3/16	223-1918	1.4961
224-2255	4	4	4.250	2.400	1-1/8, 1-3/32	1-3/16	223-1882	1.249
224-2256	5- 1/8	6	5.560	3.250	2-5/32	1-3/16	223-1921	1.9992
224-2257	5-1/8	6	5.560	3.250	2-5/32	1-3/16	223-1921	1.9992
224-2258	4-7/8	6	5.600	3.698	3-1/8	1-3/16	223-1834	1.9980
224-2260	4-1/4	4			1-7/64, 2-3/32	2-3/16	223-1938	
224-2261	4	8	3.460	1.9445	2-5/64	1-7/64	223-1920	1.110
224-2262	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2264	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2269	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2271	4.921	6	4.890	3.103	2-1/8	1-3/16	223-1929	2.125
224-2272	4.84	6	4.636	2.188	1-.110, 2-3/32	2-3/16	223-1824	1.500
224-2323	5-1/2	12	5.500	3.750	1-5/32, 3-1/8	1-3/16	223-1826	1.9989
224-2326	4.875	6	6.448	3.698	3-1/8	1-3/16		1-7/8
224-2337	3-7/8	4	5.437	3.171	1-.082, 3-3/32	2-3/16	223-1939	1.500
224-2339	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2340	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2341	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2342	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2343	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2344	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2352	3-7/8	4-6	4.580	2.515	3-3/32	1-3/16	223-1919	1.2516
224-2360	4-1/4	6			1-7/64, 2-.084	2-3/16	223-1938	
224-2369	3-7/8	4-6	4.580	2.515	3-3/32	1-3/16	223-1919	1.2516
224-2417	3-3/8	4	4.438	2.500	1-1/8, 2-5/32	1-1/4		1.1093
224-2423	3.0	4	3.500	1.750	3-3/32	1-1/4		.9194
224-2446	2-5/8	4	2.870	1.440	2-3/32	1-3/16		.6881
224-2469	4-1/4	2			4-1/8	2-3/16	223-1934	
224-2485	4-1/4	4	6.030	3.545	4-.084	2-3/16	223-1934	
224-2486	3-7/8	4	5.5625	3.171	1-.082, 3-3/32	2-3/16	223-1937	1.375
224-2540	3.433	4	3.307	1.6131	1-.0787	1-.1575		.9661
224-2541	87.2 mm	4	3.308	1.614	1-2 mm	1-4 mm		.866
224-2568	4.5	8	3.670	2.318	2-1/8	1-7/64	223-1836	1.500
224-2568X	4-1 2	8	3.670	2.318	2-1/8	1-7/64	223-1836	1.500
224-2573	4.0165	3-4-6	4.150	2.8148	1-1/8, 1-3/32	1-5/32	223-1843	1.5748
224-2574	4.0165	3-4-6	4.150	2.8148	2-3/32	1-5/32	223-1843	1.5748
224-2575	4.0165	3-4-6	4.150	2.8148	1-1/8, 1-3/32	1-5/32	223-1843	1.5748
224-2576	4.4	4	5.089	2.771	1-1/8	1-3/16		1.6254
224-2576	4.4	4	5.089	2.771	1-1/8, 2-3/32	1-3/16		1.625
224-2577	4.4	4	5.100	2.779	3-3/32	1-3/16	223-1894	1.4999
224-2578	4.200	3	5.079	2.763	3-3/32	1-3/16		1.500
224-2580	4.4	4	5.000	2.682	1-1/8, 2-3/32	1-3/16		1.500
224-2718	4.125	8	3.275	1.900	2-3/32	1-3/16		1.020
224-2731	3-1/8	4	3.414	1.749	2-3/32	1-3/16		.919
224-2737	4.5	8	3.670	2.320	1-1/8	1-7/64		1.500
224-2739	4-1/4	6	4.910	2.760	1-1/8, 1-3/32	1-3/16	223-1893	1.4999
224-2743	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2748	3-3/16	4	3.210	1.775	2-3/32	1-3/16	223-1932	.7499
224-2751	3-1/8	6	3.660	1.978	2-3/32	2-5/32		
224-2767	5-1/2	2	8.312	5.625	4-3/16	1-15/16		1.750
224-2784	4.3	6	5.020	3.4045	2-1/8	1-1/4	223-1906	1.6249
224-2785	4-1/4	6	5.810	3.1435	1-3/32, 1-1/8	1-1/4	223-1925	1.7512
224-2786	4-1 2	8	3.670	2.318	2-3/32	1-3/16		1.500
224-2786X	4-1/2	8	3.670	2.318	2-3/32	1-3/16	223-1836	1.500
224-2790	4.19	3-4-6	4.410	2.6089	1-1/8, 1-3/32	1-9/64	223-1916	1.625
224-2791	4.19	3-4-6	4.410	2.6089	1-1/8, 1-3/32	1-9/64	223-1901	1.375

## PISTON NUMERICAL SPECIFICATIONS-HEAVY DUTY

Part No.	Bore	No. Cyl.	Length	Comp. Dist.	Rings Comp.	Rings Oil	Pin	Pin O.D.
224-2796	4.3	6	5.020	3.3985	2-1/8	1-1/4	223-1906	1.6249
224-2807	4.51	8	4.110	2.8655	1-1/8, 1-3/32	1-3/16	223-1924	1.4999
224-2818	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2819	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2820	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2821	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2822	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2823	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-2827	3.250	4-5	3.375	1.500	3-3/32	1-3/16		.750
224-2831			3.4375	2.000	2-3/32, 1-8/32	1-5/32		
224-2847	3-7/16	4	3.9062	2.090	2-3/32	1-3/16	223-1856	.9122
224-2874	3-1/8	4	3.625	1.703	3-3/32	1-1/4		.919
224-2908	4.110	8			2-5/64	1-7/64		
224-2937	4	4	5.3125	3.140	3-3/32	1-1/4	223-1852	1.3126
224-3012	4.49	6	4.740	3.1085	1-5/32, 1-1/8	1-9/64		1.7717
224-3013	3-55/64	3-4	3.9062	2.255	2-3/32	1-.197	223-1887	1.1879
224-3014	4-1/8	6	5.482	3.043	1-1/8, 1-3/32	1-1/4	223-1888	1.4999
224-3015	4-3/4	4-6	5.110	2.910	2-1/8	1-1/8	223-1835	1.6998
224-3015X	4-3/4	4-6	5.110	2.910	2-1/8	1-1/8	223-1835	1.6998
224-3016	155mm	6	6.690	4.133	2-5/32	1-3/16	223-1923	2.3619
224-3017	4-1/8	6	5.420	3.040	1-1/8, 1-3/32	1-1/4	223-1888	1.4999
224-3018	5-1/4	6	6.990	4.239	3-1/8	1-1/4	223-1886	2.0016
224-3022	6-1/4	6-8-12-16	8.190	5.181	2-5/32	1-1/4	223-1832	2.4490
224-3022X	6-1/4	6-8-12-16	8.190	5.181	2-5/32	1-1/4	223-1832	2.449
224-3023	5.4	6	5.390	3.462	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3023X	5.4	6	5.390	3.462	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3025	3-3/8	4	3.4375	2.000	3-1/8	1-1/4	223-1940	.857
224-3026	6-1/4	6-16	8.190	5.1825	1-1/8, 1-3/32	1-1/4	223-1832	2.4490
224-3026X	6-1/4	6-8-12-16	8.190	5.1825	1-1/8, 1-3/32	1-1/4	223-1832	2.449
224-3027	5-1/8	6-12	5.970	3.709	3-5/32	1-1/4	223-1842	1.9989
224-3028	5.4	6			1-5/32, 1-1/8, 1-1/8	1-1/8	223-1830	2.000
224-3028X	5.4	6			1-5/32, 1-1/8, 1-1/8	1-1/8	223-1830	2.000
224-3029	10	6	13.910	8.650	4-3/16	2-5/16		3.500
224-3030	10	6			4-3/16	2-5/16		
224-3031	9-38	6	11.070	6.0645	3-3/16	2-3/8	223-1841	3.000
224-3032	9-3/8	6	10.47	5.4695	3-3/16	2-3/8	223-1841	3.000
224-3033	4-5/8	6	5.875	3.000	3-1/8	2-3/16	223-1875	1.3745
224-3034	4-3/4	4-6	4.530	2.906	1-1/8, 1-3/32	1-7/32	223-1835	1.6998
224-3034X	4-3/4	4-6	4.530	2.906	1-1/8, 1-3/32	1-7/32	223-1835	1.6998
224-3039	4.02	6	4.070	2.254	1-1/8, 1-3/32	1-5.0mm	223-1899	1.1877
224-3044	6-1/4	6	6.380	4.3965	2-.155	1-3/16.	223-1922	2.3989
224-3163	4.110	8			1-.118, 1-5/64	1-.136		
224-3185	5-3/4	6	8.1875	5.187	2-5/32	1-1/4	223-1831	2.3899
224-3185X	5-3/4	6	8.1875	5.187	2-5/32	1-1/4	223-1831	2.3899
224-3189	5-3/4	4-6-8-12	8.1875	5.187	1-3/16, 1-3/32	1-1/4	223-1831	2.3899
224-3189X	5-3/4	4-6-8-12	8.1875	5.187	1-3/16, 1-3/32	1-1/4	223-1831	2.3899
224-3193	3-3/8	4	3.7031	1.890	3-1/8	1-3/16	223-1933	.8126
224-3194	3-3/8	4	3.5625	1.937	3-1/8	1-3/16	223-1845	.860
224-3195	4-1/8	4	4.3593	2.359	1-3/32, 2-1/8	1-3/16	223-1931	.9894
224-3196	3-1/4	4	3.6250	1.703	3-3/32	1-1/4	223-1827	.919
224-3197	3-1/2	4	3.9032	2.090	2-3/32	1-3/16	223-1856	.9122
224-3198.045	4.045	2	4.130	2.245	3-3/32	1-1/4	223-1865	1.000
224-3200	4-5/8	4-6	6.4375	4.000	1-3/32	2-1/4	223-1851	1.5005
224-3201	6-1/4	6	7.5937	3.909	3-3/16	2-1/4	223-1849	1.8745
224-3202	4-1/2	4-6	5.500	3.755	1-1/8, 1-3/32	1-7/32	223-1829	1.500

## PISTON NUMERICAL SPECIFICATIONS-HEAVY DUTY

Part No.	Bore	No. Cyl.	Length	Comp. Dist.	Rings Comp.	Rings Oil	Pin	Pin O.D.
224-3202X	4-1/2	4-6	5.500	3.755	1-1/8, 1-3/32	1-7/32	223-1829	1.500
224-3203	5-3/8	6	6-3/8	3.125	3-3/32	2-1/4	223-1853	1.6244
224-3204	4-1/4	4-6	5.250	2.875	3-3/32	1-1/4	223-1874	1.3585
224-3205	5-3/8	6	6.5937	3.343	3-3/32	2-1/4	223-1853	1.6244
224-3206	3-3/4	4-6	4.1875	2.312	3-1/8	1-3/16	223-1855	1.2496
224-3207	4-5/8	6	5.5625	2.674	3-1/8	2-3/16	223-1875	1.3745
224-3208	4-7/16	4-6	4.82813	2.952	3-1/8	1-3/16	223-1883	1.4989
224-3209	4-7/16	4-6	4.82813	3.039	3-1/8	1-3/16	223-1883	1.4989
224-3210	4-3/4	6	5-1/2	3.017	1-5/32, 1-3/32	1-1/4	223-1881	1.750
224-3211	3-7/8	6	4.406	2.636	3-1/8	1-3/16	223-1892	1.4173
224-3212	4.321	6	5.1093	2.975	1-1/8, 1-3/32	1-1/4	223-1888	1.4999
224-3213	4-1/2	8	4.281	2.765	1-1/8	1-7/64	223-1836	1.499
224-3213X	4-1/2	8	4.281	2.765	1-1/8	1-7/64	223-1836	1.4999
224-3214	4-1/2	8	3.9218	2.565	1-1/8	1-7/64	223-1836	1.499
224-3214X	4-1/2	8	3.9218	2.565	1-1/8	1-7/64	223-1836	1.4999
224-3215	4-1/2	6	4.8906	2.942	1-1/8, 2-3/32	1-1/4	223-1897	1.6249
224-3216	4-5/8	6-8	4.090	2.392	2-3/32	1-3/16	223-1898	1.3739
224-3217	4-3/4	4-6	4.530	2.907	1-1/8, 1-3/32	1-7/32	223-1829	1.500
224-3217X	4-3/4	4-6	4.530	2.907	1-1/8, 1-3/32	1-7/32	223-1829	1.500
224-3218	3-5/8	4-6	3.750	2.3125	3-3/32	1-3/16	223-1848	1.2497
224-3219	3-7/8	6	4.2343	2.3755	2-3/32	1-3/16	233-1837	1.2495
224-3220	5-1/8	4-6	6.250	4.000	3-5/32	1-1/4	223-1842	1.9989
224-3221	3-7/8	6	4.420	2.561	2-3/32	1-3/16	233-1837	1.2495
224-3222	7	6	9.531	5.730	3-3/16	1-5/16	223-1936	2.4997
224-3223	4-5/8	8	4.540	2.8415	1-1/8, 1-3/32	1-7/64	223-1902	1.4981
224-3224	4-3/8	4-6	5.280	2.894	2-3/32	1-1/4	223-1905	1.4994
224-3225	3-7/8	6	4.610	2.850	1-1/8	1-3/16	223-1907	1.6249
224-3226	5-3/8	6	6.780	4.0225	2-1/8	1-1/4	223-1908	2.2494
224-3227	3-7/8	6	4.230	2.375	1-1/8, 1-3/32	1-3/16	223-1837	1.2495
224-3228	4-1/2	4-6	6.125	3.753	1-1/8, 2-3/32	1-7/32	223-1828	1.812
224-3228X	4-1/2	4-6	6.125	3.753	1-1/8, 2-3/32	1-7/32	223-1828	1.812
224-3229	3-7/8	6	4.220	2.363	2-3/32	1-3/16	223-1837	1.2495
224-3230	6-1/4	6-16	6.890	3.886	1-1/8, 1-3/32	1-1/4	223-1832	2.4490
224-3230X	6-1/4	6-16	6.890	3.886	1-1/8, 1-3/32	1-1/4	223-1832	2.4490
224-3231	6-1/4	6-16	7.312	4.306	1-1/8, 1-3/32	1-1/4	223-1832	2.4490
224-3231X	6-1/4	6-812-16	7.312	4.306	1-1/8, 1-3/32	1-1/4	223-1832	2.449
224-3232	4.321	6	5.110	2.975	1-1/8, 1-3/32	1-1/4	223-1906	1.6249
224-3233	5-3/8	6	6.780	4.020	2-1/8	1-1/4	223-1908	2.2494
224-3234	4-5/8	8	4.570	2.872	1-1/8, 1-3/32	1-7/64	223-1902	1.4981
224-3235	5.4	8-12-16	6.200	4.1165	2-1/8	1-1/8	223-1838	1.999
224-3235X	5.4	8-12-16	6.200	4.1165	2-1/8	1-1/8	223-1838	1.9998
224-3236	3-5/8	4	3.420	1.8125	2-3/32	1-3/16	223-1910	.8742
224-3237	5-1/4	6	6.980	4.235	3-1/8	1-1/4	223-1911	2.2516
224-3238	5.4	8-12	5.400	3.461	2-1/8	1-1/8	223-1833	1.999
224-3238X	5.4	8-12	5.400	3.461	2-1/8	1-1/8	223-1833	1.9998
224-3239	5.4	6-12	5.480	3.542	2-1/8	1-1/8	223-1839	1.999
224-3239X	5.4	6-12	5.480	3.542	2-1/8	1-1/8	223-1839	1.9998
224-3230X	6-1/4	6-8-12-16	6.890	3.886	1-1/8	1-1/4	223-1832	2.449
224-3240	5.4	6	5.480	3.5465	2-1/8	1-1/8	223-1839	1.999
224-3240X	5.4	6	5.480	3.5465	2-1/8	1-1/8	223-1839	1.999
224-3241	5.4	6	5.390	3.462	2-1/8	1-1/8	223-1833	1.999
224-3241X	5.4	6	5.390	3.462	2-1/8	1-1/8	223-1833	1.9998
224-3242	4-7/16	4-6	5.985	3.609	1-3/32, 2-1/8	1-1/4	223-1913	1.626
224-3243	4-7/16	4-6	5.995	3.611	1-3/32	1-1/4	223-1913	1.626
224-3244	5.4	6	5.390	3.468	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3244X	5.4	6	5.390	3.468	1-5/32, 1-1/8	1-1/8	223-1830	2.000

## PISTON NUMERICAL SPECIFICATIONS-HEAVY DUTY

Part No.	Bore	No. Cyl.	Length	Comp. Dist.	Rings Comp.	Rings Oil	Pin	Pin O.D.
224-3245	5.4	6-8-12	5.390	3.462	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3245X	5.4	6-8-12	5.390	3.462	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3246	7-1/2	12	8.310	4.375	3-5/32	1-3/16	223-1861	2.3734
224-3247	7-1/2	6-8	8.310	4.375	3-5/32	1-3/16	223-1915	1.9983
224-3248	4-3/4	4-6	4.530	2.907	1-1/8, 1-3/32	1-7/32	223-1829	1.500
224-3248X	4-3/4	4-6	4.530	2.907	1-1/8, 1-3/32	1-7/32	223-1829	1.500
224-3249	5-1/2	6	6.290	4.030	1-5/32	1-3/16	223-1826	1.9989
224-3240X	5.4	6	5.480	3.5465	2-1/8	1-1/8	223-1839	1.9998
224-3250	3-7/8	4-6	4.087	2.373	2-3/32	1-3/16	223-1837	1.2495
224-3251	4-3/4	4-6	4.530	2.910	2-1/8	1-1/8	223-1835	1.6998
224-3251X	4-3/4	4-6	4.530	2.910	2-1/8	1-1/8	223-1835	1.6998
224-3252	4-3/4	6	4.5312	2.910	2-1/8	1-1/8	223-1835	1.6998
224-3252X	4-3/4	6	4.5312	2.910	2-1/8	1-1/8	223-1835	1.6998
224-3253	4-1/4	4-6	4.891	2.7515	1-1/8, 1-3/32	1-1/4	223-1893	1.4999
224-3254	3-7/8	4-6	4.240	2.388	2-3/32	1-3/16	223-1837	1.2495
224-3255	3-7/8	4-6	4.240	2.390	1-1/8, 1-3/32	1-3/16	223-1837	1.2495
224-3256	155mm	6	6.590	4.034	2-5/32	1-3/16	223-1923	2.3619
224-3257	4-1/4	4-6	4.890	2.7595	1-1/8, 1-3/32	1-1/4	223-1893	1.4999
224-3258	4-3/4	6	4.5312	2.906	1-1/8, 1-3/32	1-7/32	223-1835	1.6996
224-3258X	4-3/4	6	4.5312	2.906	1-1/8, 1-3/32	1-7/32	223-1835	1.6996
224-3259	3-7/8	3-4	4.013	2.635	1-1/8, 1-3/32	1-1/4	223-1892	1.4173
224-3260	4.4	6	4.980	2.668	1-1/8, 2-3/32	1-3/16	223-1926	1.6254
224-3261	4-3/4	4-6	5.110	2.9100	1-1/8, 1-3/32	1-1/8	223-1835	1.6998
224-3261X	4-3/4	4-6	5.110	2.9100	1-1/8, 1-3/32	1-1/8	223-1835	1.6998
224-3262	4	6	4.350	2.6225	2-1/8	1-5/32	223-1928	1.490
224-3263	4-3/4	4-6	5.110	2.9100	2-1/8	1-1/8	223-1835	1.6698
224-3263X	4-3/4	4-6	5.110	2.9110	2-1/8	1-1/8	223-1835	1.6998
224-3264	4.3	6	5.020	3.3995	1-1/8, 2-3/32	1-1/4	223-1906	1.6294
224-3265	6.700	8-12-16	7.240	4.6815	2-4mm	1-5mm	223-1840	2.770
224-3265X	6.7	8-12-16	7.240	4.6815	2-4mm	1-5mm	223-1840	2.770
224-3266	4.11	8	3.460	1.9485	1-.118	1.1364	223-1920	1.110
224-3267	6-1/4	6	6.380	4.3965	2-.155	1-3/16	223-1922	2.3989
224-3268	5.4	6	5.390	3.468	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3268X	5.4	6	5.390	3.468	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3269	5-1/2	6	5.905	3.645	1-5/32, 2-1/8	1-3/16	223-1826	1.9989
224-3270	4-3/4	4-6	4.460	2.261	1-1/8, 1-3/32	1-5/32	223-1829	1.500
224-3270X	4-3/4	4-6	4.460	2.261	1-1/8, 1-3/32	1-5/32	223-1829	1.500
224-3271	4-3/4	4-6	4.500	2.301	1-1/8, 1-3/32	1-5/32	223-1829	1.500
224-3271X	4-3/4	4-6	4.500	2.301	1-1/8, 1-3/32	1-5/32	223-1829	1.500
224-3272	4.3	6	5.020	3.4075	2-1/8	1-1/4	223-1906	1.6249
224-3275	5.4	4-6-8	6.190	4.118	2-1/8	1-1/8	223-1833	
224-3275X	5.4	4-6-8	6.190	4.118	2-1/8	1-1/8	223-1833	
224-3276	4.921	6	4.920	3.1313	2-1/8	1-3/16	223-1929	2.125
224-3277	4.5625	8	4.920	2.770	2-5/32	1-3/16	223-1914	
224-3270X	4-3/4	4-6	4.460	2.261	1-1/8	1-5/32	223-1829	1.500
224-3282	3-7/8	2			1-.082, 3-3/32	2-3/16	223-1937	
224-3284	5-1/2	6	6.270	4.0294	1-5/32, 1-7/64	1-3/16	223-1844	2.500
224-3288	5-1/2	6	6.290	4.030	1-5/32, 1-7/64	1-3/16	223-1826	1.9989
224-3289	5-1/2	6	6.290	4.030	1-5/32, 1-7/64	1-3/16	223-1826	1.9989
224-3290	5-1/2	6	6.270	4.0294	1-5/32, 1-7/64	1-3/16	223-1844	2.500
224-3291	5-1/2	6	5.430	3.4674	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3291X	5-1/2	6	5.430	3.4674	1-5/32, 1-1/8	1-1/8	223-1830	2.000
224-3292	5-1/2	6	4.890	3.1030	2-1/8	1-3/16		2.125
224-3293	5-1/2	6	4.740	3.1085	1-3.0, 1-3.5	1-4.0		1.750
224-3294	5-1/2	6	6.270	4.0294	1-5/32, 1-7/64	1-3/16	223-1844	2.500
224-3295	5-1/2	6	6.290	4.030	1-5/32, 1-7/64	1-3/16	223-1826	1.9989



## PISTON NUMERICAL SPECIFICATIONS-HEAVY DUTY

Part No.	Bore	No. Cyl.	Length	Comp. Dist.	Rings Comp.	Rings Oil	Pin	Pin O.D.
224-3296	4.3	6	5.030	3.4095	2-1/8	1-1/4	223-1906	1.625
224-3298	5.4	6	5.240	3.466	1-5/32, 1-1/8	1-1/8		2.1658
224-3299	5.4	6	5.240	3.466	1-5/32, 1-1/8	1-1/8		2.1658
224-3301	5.4	6	5.430	3.467	1-5/32, 1-1/8	1-1/8		2.1658
224-3311	9-3/8	6-12-16	11.01	6.0708	3-3/16	1-3/8	223-1841	3.000
224-3313	6.250		6.380	4.3965	2-5/32	1-3/16	223-1922	

## OVERSIZE PISTON AVAILABILITY

Part Number	Available Sizes	Part Number	Available Sizes	Part Number	Available Sizes
224-1020	.020, .030, STD, .040	224-1721	STD, .030	224-1932	STD
224-1048	STD	224-1730	STD, .020, .030, .040	224-1946	STD, .020, .030, .040, .060
224-1343	STD, .030	224-1735	STD, .020, .030, .040, .060	224-1949	STD, .020, .030, .040, .060
224-1386	STD	224-1737	STD, .030, .040, .060	224-1953	STD, .020, .030, .040
224-1397	STD, .020, .030, .040, .060	224-1740	STD, .020, .030, .040, .060	224-1976	STD, .020, .030
224-1401	STD	224-1746	STD, .030, .040, .060	224-1979	STD, .020, .030, .040
224-1402	STD	224-1747	STD, .030, .040	224-1999	STD, .020, .030, .040, .060
224-1404	STD	224-1749	STD, .030, .040, .060	224-2001	STD, .020, .030, .040, .060
224-1408	STD, .020, .030, .040, .060	224-1754	STD, .030, .060	224-2002	STD, .020, .030, .040, .060
224-1411	STD, .030, .040, .060	224-1758	STD, .030	224-2004	STD, .020, .030, .040, .060
224-1425	STD	224-1766	STD	224-2007	STD, .020, .030, .040, .060
224-1426	STD	224-1777	STD	224-2009	STD, .020, .030, .040, .060
224-1427	STD	224-1795	STD, .020, .030, .040, .060	224-2010	STD
224-1429	STD	224-1800	STD, .030, .060	224-2012	STD, .020, .030, .040, .060
224-1430	STD	224-1801	STD, .030, .060	224-2015	STD, .020, .030
224-1431	STD	224-1802	STD, .030, .060	224-2016	STD, .020, .030, .040
224-1432	STD	224-1803	STD, .030	224-2023	STD
224-1438	STD	224-1810	STD, .020, .030, .040, .060	224-2024	STD
224-1451	STD, .030, .040	224-1831	STD, .020, .030, .040, .060	224-2025	STD
224-1457	STD	224-1832	STD, .020, .030, .040, .060	224-2026	STD
224-1459	STD	224-1834	STD, .030	224-2027	STD
224-1463	STD	224-1838	STD	224-2028	STD
224-1475	STD	224-1840	STD, .020, .030, .040, .060	224-2029	STD
224-1476	STD	224-1842	STD, .020, .030, .040, .060	224-2030	STD
224-1504	STD, .020, .030, .040, .060	224-1843	STD, .020, .030, .040, .060	224-2031	STD
224-1509	STD	224-1845	STD, .020, .030, .040, .060	224-2034	STD, .020, .030, .040, .060
224-1510	STD	224-1848	STD, .020, .030	224-2035	STD, .030, .040
224-1511	STD	224-1849	STD, .030, .040	224-2036	STD, .030, .040, .060
224-1527	STD, .020, .030, .040, .060	224-1850	STD, .020, .030, .040, .060	224-2037	STD, .020, .030, .040, .060
224-1529	STD, .020, .030, .040, .060	224-1852	STD, .020, .030, .040, .060	224-2038	STD, .020, .030, .040, .060
224-1538	STD	224-1856	STD, .020, .030, .040, .060	224-2039	STD, .020, .030, .040, .060
224-1544	STD, .020, .030, .040, .060	224-1859	STD	224-2040	STD, .020, .030, .040, .060
224-1549	STD, .040	224-1860	STD, .020, .030, .040, .060	224-2042	STD, .020, .030, .040, .060
224-1552	STD	224-1863	STD, .020, .030, .040, .060	224-2047	STD, .020
224-1563	STD, .020, .030, .040, .060	224-1866	STD, .030, .040	224-2050	STD, .020
224-1568	STD, .020, .030, .040, .060	224-1869	STD, .030, .040, .060	224-2053	STD, .020, .030, .040
224-1602	STD, .030	224-1870	STD, .020, .030, .040, .060	224-2054	STD, .020
224-1611	STD, .040	224-1872	STD, .030	224-2055	STD, .020, .030, .040
224-1631	STD	224-1873	STD, .030, .040	224-2079	STD, .020, .040
224-1643	STD	224-1882	STD, .030, .040, .060	224-2088	STD, .020, .030, .040
224-1646	STD	224-1884	STD, .030, .040	224-2091	STD
224-1649	STD	224-1885	STD, .030, .040, .060	224-2093	STD, .020, .030, .040
224-1650	STD, .020, .030, .040, .060	224-1889	STD, .020, .030, .040, .060	224-2099	STD, .020, .030, .040
224-1658	STD, .020, .030, .040, .060	224-1893	STD, .020, .040	224-2101	STD, .020, .030, .040
224-1666	STD, .030, .040	224-1894	STD, .020, .030, .040, .060	224-2103	STD
224-1670	STD, .020, .030, .040, .060	224-1895	STD, .030, .040, .060	224-2108	STD, .020, .030, .040, .060
224-1672	STD	224-1897	STD	224-2110	STD, .030
224-1676	STD	224-1899	STD	224-2112	STD
224-1680	STD	224-1901	STD, .020, .040	224-2114	STD
224-1688	STD, .030	224-1902	STD, .040	224-2117	STD
224-1689	STD, .030	224-1904	STD	224-2118	STD, .030
224-1690	STD, .030, .060	224-1915	STD	224-2119	STD, .030
224-1699	STD, .030, .040, .060	224-1916	STD, .020, .030, .040, .060	224-2120	STD, .020, .030, .040
224-1701	STD, .030, .040	224-1921	STD, .020, .030, .040, .060	224-2122	STD, .020, .030, .040, .060
224-1708	STD, .020, .030, .040, .060	224-1922	STD	224-2123	STD, .020, .030, .040, .060
224-1712	STD, .020, .030, .040, .060	224-1927	STD, .020X, .020, .040, .040X	224-2124	STD
224-1713	STD, .020, .030, .040, .060	224-1927X	STD, .020, .040	224-2125	STD, .020, .030, .040
224-1715	STD, .020, .030, .040, .060	224-1930	STD, .020, .030, .040, .060	224-2126	STD, .030

## OVERSIZE PISTON AVAILABILITY

Part Number	Available Sizes	Part Number	Available Sizes	Part Number	Available Sizes
224-2127	STD, .020, .030, .040	224-2258	STD	224-2367	STD, .020
224-2128	STD, .020, .030, .040, .060	224-2260	STD	224-2369	STD
224-2130	STD, .020, .030, .040, .060	224-2262	STD	224-2372	STD, .030
224-2132	STD, .020, .030, .040, .060	224-2264	STD	224-2373	STD, .030
224-2140	STD	224-2269	STD	224-2374	STD, .020, .030, .040
224-2141	STD, .020, .030, .040, .060	224-2271	STD	224-2375	STD, .020, .030, .040
224-2143	STD	224-2272	STD	224-2384	STD, .020, .030, .040
224-2144	STD	224-2274	STD, .020, .030, .040	224-2387	STD, .020, .040
224-2151	STD, .020, .030, .040	224-2275	STD, .020, .030	224-2417	STD
224-2154	STD, .020, .030	224-2276	STD, .020	224-2419	STD
224-2158	STD, .020, .030, .040, .060	224-2281	STD, .020, .030, .040	224-2423	STD
224-2159	STD, .020, .030, .040, .060	224-2283	STD, .020, .030, .040	224-2446	STD, .030, .040, .060
224-2160	STD	224-2289	STD, .020, .030, .040	224-2469	STD
224-2168	STD	224-2290	STD, .020	224-2485	STD
224-2169	STD	224-2291	STD, .020, .030, .040	224-2486	STD
224-2170	STD	224-2297	STD	224-2500	STD, .020, .040
224-2171	STD	224-2300	STD, .020	224-2511	STD, .020, .030, .040, .060
224-2172	STD	224-2302	STD, .020, .040	224-2512	STD, .020, .040
224-2174	STD	224-2303	STD, .020	224-2513	STD, .020, .040
224-2176	STD	224-2304	STD, .020, .030, .040	224-2517	STD, .020, .030, .040, .060
224-2178	STD, .020, .040	224-2305	STD, .020, .030	224-2519	STD, .030, .040
224-2179	STD, .030, .040, .060	224-2308	STD, .020	224-2530	STD, .030
224-2180	STD, .020, .030, .040, .060	224-2310	STD, .020, .030, .040	224-2552	STD, .020, .030, .040, .060
224-2182	STD, .020, .040	224-2311	STD, .020, .030, .040	224-2553	STD, .030, .040
224-2185	STD, .020, .030, .040, .060	224-2312	STD, .020, .030, .040	224-2554	STD, .020, .030, .040
224-2186	STD	224-2313	STD	224-2555	STD, .020, .030, .040
224-2187	STD, .020, .030, .040, .060	224-2314	STD, .020, .030, .040	224-2556	STD, .020, .030, .040
224-2188	STD, .020X, .040X, .020, .040	224-2315	STD, .020, .030, .040	224-2558	STD, .020, .030, .040, .060
224-2188X	STD, .020, .040	224-2321	STD, .020, .030, .040, .060	224-2559	STD, .020, .030, .040
224-2190	STD, .010, .020, .030, .040, .060	224-2322	STD, .020, .030, .040, .060	224-2561	STD, .020, .030, .040
224-2191	STD	224-2323	STD	224-2563	STD, .020, .030, .040
224-2192	STD, .020, .030, .040, .060	224-2330	STD, .020, .030, .040	224-2565	STD, .020, .030, .040, .060
224-2194	STD	224-2331	STD, .020, .030	224-2566	STD, .020
224-2195	STD	224-2332	STD, .020, .030, .040	224-2567	STD, .020, .030, .040
224-2197	STD	224-2334	STD, .020, .030, .040	224-2568	.020, .030, .040, STD, .020X, .030X, .040X
224-2199	STD	224-2335	STD, .020, .030	224-2568X	STD, .020, .030
224-2200	STD	224-2336	STD, .020	224-2573	STD, .020, .040
224-2201	STD	224-2337	STD	224-2574	STD, .020, .040
224-2202	STD	224-2339	STD	224-2575	STD, .020, .040
224-2222	STD, .020, .030, .040, .060	224-2340	STD	224-2576	STD, .020, .040
224-2225	STD, .020, .030, .040, .060	224-2341	STD	224-2577	STD, .020, .040
224-2226	STD, .020, .030, .040	224-2342	STD	224-2580	STD, .020, .040
224-2228	STD, .020, .040	224-2343	STD	224-2581	STD, .020, .030, .040, .060
224-2229	STD	224-2344	STD	224-2582	STD, .030, .040, .060
224-2230	STD, .020, .030, .040, .060	224-2347	STD, .020, .030, .040, .060	224-2583	STD, .020, .030, .040, .060
224-2231	STD, .020, .030, .040, .060	224-2348	STD, .020, .030, .040, .060	224-2587	STD, .020, .030, .040, .060
224-2234	STD, .020, .030, .040, .060	224-2349	STD, .020, .030, .040, .060	224-2692	STD, .020
224-2236	STD	224-2350	STD, .020, .030, .040	224-2694	STD, .020, .030, .040, .060, .080
224-2239	STD	224-2351	STD, .020, .030, .040, .060	224-2696	STD, .020, .030, .040
224-2243	STD	224-2352	STD	224-2699	STD, .020, .030, .040
224-2244	STD, .020, .030, .040	224-2353	STD, .020, .030, .040	224-2701	STD, .020
224-2245	STD	224-2354	STD, .030, .060	224-2702	STD, .020, .030, .040, .060
224-2246	STD	224-2357	STD, .020, .030, .040, .060	224-2704	STD, .020, .030, .040, .060
224-2251	STD, .010, .020, .030	224-2358	STD, .020, .030, .040	224-2705	STD, .020, .030, .040
224-2252	STD, .010, .020, .030	224-2359	STD, .003, .005, .010, .020, .030, .050	224-2706	STD, .020, .030, .040, .060
224-2255	STD	224-2360	STD	224-2707	STD, .020, .030, .040
224-2256	STD	224-2364	STD, .020	224-2709	STD, .020, .030, .040, .060
224-2257	STD	224-2366	STD, .020	224-2712	STD, .020, .030, .040

## OVERSIZE PISTON AVAILABILITY

Part Number	Available Sizes	Part Number	Available Sizes	Part Number	Available Sizes
224-2714	STD, .020	224-2808	STD, .020, .030, .040	224-2929	STD, .020, .040
224-2715	STD, .020	224-2810	STD, .020, .030, .040, .060	224-2930	STD, .020, .040
224-2716	STD, .020	224-2811	STD, .020, .030, .040	224-2932	STD, .020, .030, .040
224-2719	STD, .020, .030, .040, .060	224-2812	STD, .020, .030, .040	224-2933	STD, .020, .030, .040
224-2731	STD	224-2813	STD, .020, .030, .040, .060	224-2934	STD, .020, .030, .040
224-2735	STD, .020, .030, .040, .060	224-2814	STD, .020, .030, .040	224-2935	STD, .020, .040
224-2736	STD, .020, .040	224-2815	STD, .020, .030, .040	224-2937	STD
224-2737	STD	224-2817	STD, .020, .030, .040	224-2938	STD, .020, .030, .040
224-2738	STD, .020, .030, .040	224-2818	STD	224-2940	STD, .030, .040, .060
224-2739	STD	224-2819	STD	224-2944	STD, .020, .030, .040
224-2740	STD, .020, .030, .040, .060	224-2820	STD	224-2945	STD, .020, .030, .040, .060
224-2741	STD, .020, .030, .040, .060	224-2821	STD	224-2947	STD, .020, .030, .040
224-2742	STD, .020, .030, .040, .060, .083	224-2822	STD	224-2948	STD, .020, .030, .040, .060
224-2743	STD	224-2823	STD	224-2975	STD, .020, .040
224-2744	STD, .030, .040, .060	224-2827	STD, .020, .030, .040, .060	224-2976	STD, .020, .040
224-2745	STD, .020, .030, .040, .060	224-2831	STD, .030, .040, .060	224-2977	STD, .020, .040
224-2748	STD	224-2840	STD, .030, .040, .060	224-2978	STD, .020, .040
224-2751	STD, .030, .040, .060	224-2847	STD, .040	224-2979	STD, .020, .040
224-2753	STD, .020, .040	224-2855	STD, .020, .030, .040, .060	224-2980	STD, .020, .040
224-2754	STD, .020, .030, .040, .060	224-2874	STD	224-2981	STD, .020, .040
224-2755	STD, .020, .030, .040, .060	224-2877	STD, .020, .030, .040, .060	224-2982	STD, .020, .040
224-2756	STD, .020, .030, .040, .060	224-2880	STD, .020, .030, .040	224-2983	STD, .020, .040
224-2757	STD, .020, .030, .040	224-2881	STD, .020, .040	224-2984	STD, .020, .040
224-2758	STD, .020, .030, .040, .060	224-2882	.030, .040, STD, .020	224-2985	STD, .020, .040
224-2759	STD, .020, .030, .040	224-2883	STD, .020, .030, .040	224-2986	STD, .020, .040
224-2761	STD, .020, .030, .040	224-2887	STD, .010, .020, .030, .040	224-2987	STD, .020, .040
224-2762	STD, .020, .030, .040	224-2888	STD, .020, .030, .040	224-2988	STD, .020, .040
224-2770	STD, .020, .030, .040, .060	224-2889	STD, .020, .030, .040	224-2989	STD, .020, .030, .040
224-2773	STD, .020, .030, .040	224-2890	STD, .020, .030, .040	224-2990	STD, .030, .040, .060
224-2774	STD, .020, .030, .040	224-2891	STD, .020, .030, .040, .060	224-2991	STD, .010, .020, .030, .040
224-2775	STD, .020, .030, .040, .060	224-2892	STD, .020, .030, .040	224-2992	STD, .020, .030, .040, .060
224-2777	STD, .020, .030, .040, .060	224-2893	STD, .020, .030, .040	224-2993	STD
224-2779	STD, .020, .030, .040, .060	224-2894	STD, .020, .030, .040	224-2994.045	.045
224-2781	STD, .020, .030, .040, .060	224-2895	STD, .020, .030, .040	224-2995.045	.045
224-2783	STD, .020, .030, .040	224-2896	STD, .020, .030, .040	224-2996	STD, .020, .040
224-2785	STD	224-2897	STD, .020, .030, .040	224-2997	STD, .010, .020
224-2786	.020X, .040X, STD, .020, .040	224-2898	STD, .020, .030, .040	224-2998	STD, .010, .020
224-2786X	STD, .020, .040	224-2899	STD, .020, .030, .040	224-3000	STD, .020, .030
224-2787.030	.030	224-2900	STD, .020, .030, .040	224-3002	STD, .020, .040
224-2787.060	.060	224-2902	STD, .020, .030, .040	224-3003	STD, .020, .040
224-2787.100	.100	224-2904	STD, .030, .040, .060	224-3004	STD, .020, .030
224-2789.030	.030	224-2905	STD, .020, .030, .040	224-3005	STD, .020, .040
224-2789.040	.040	224-2907	STD, .020, .030, .040	224-3012	STD
224-2789.060	.060	224-2908	STD, .020, .030, .040	224-3013	STD
224-2790	STD	224-2909	STD, .020, .030, .040	224-3014	STD
224-2791	STD	224-2912	STD, .020, .030, .040	224-3015	STD
224-2792	STD, .020, .030, .040	224-2913	STD, .020, .030, .040, .060	224-3015X	STD
224-2793	STD, .020, .040	224-2914	STD, .020, .030, .040, .060	224-3016	STD
224-2797	STD, .010, .020	224-2915	STD, .020, .030, .040	224-3017	STD
224-2799.030	.030	224-2916	STD, .020, .030, .040	224-3018	STD
224-2799.060	.060	224-2917	STD, .020, .040	224-3021.045	.045
224-2799.100	.100	224-2919	STD, .020, .030, .040, .060	224-3021.090	.090
224-2800	STD, .010	224-2920	STD, .020, .030, .040, .060	224-3022	STD
224-2801	STD, .030, .040	224-2921	STD, .020, .040	224-3022X	STD
224-2802	STD, .020, .030, .040, .060	224-2922	STD, .020, .040	224-3023	STD
224-2803	.060, STD, .020, .030, .040	224-2923	STD, .020, .040	224-3023X	STD
224-2806	STD, .020, .030, .040	224-2927	STD, .020, .040	224-3024.045	.045
224-2807	STD, .010, .020, .030	224-2928	STD, .020, .030, .040	224-3024.090	.090

## OVERSIZE PISTON AVAILABILITY

Part Number	Available Sizes	Part Number	Available Sizes	Part Number	Available Sizes
224-3025	STD	224-3189X	STD	224-3240	STD
224-3026	STD	224-3190	STD, .020	224-3240X	STD
224-3026X	STD	224-3191	STD, .020, .030, .040	224-3241	STD
224-3027	STD	224-3192	STD, .020, .040	224-3241X	STD
224-3028	STD	224-3193	STD	224-3242	STD
224-3028X	STD	224-3194	STD	224-3243	STD
224-3029	STD	224-3195	STD	224-3244	STD
224-3030	STD	224-3196	STD	224-3244X	STD
224-3031	STD	224-3197	STD	224-3245	STD
224-3032	STD	224-3198.045	.045	224-3245X	STD
224-3033	STD	224-3199.045	.045	224-3246	STD
224-3034	STD	224-3201	STD	224-3247	STD
224-3034X	STD	224-3202	STD	224-3248	STD
224-3039	STD	224-3202X	STD	224-3248X	STD
224-3040	STD, .020, .040	224-3203	STD	224-3249	STD
224-3041	STD, .020, .030, .040	224-3204	STD	224-3250	STD
224-3042	STD, .020, .030, .040	224-3205	STD	224-3251	STD
224-3043	STD, .020, .040	224-3206	STD	224-3251X	STD
224-3044	STD	224-3207	STD	224-3252	STD
224-3045	STD, .020, .040	224-3208	STD	224-3252X	STD
224-3046	STD, .020	224-3209	STD	224-3253	STD
224-3047	STD, .020, .040	224-3210	STD	224-3254	STD
224-3048	STD	224-3211	STD	224-3256	STD
224-3049	STD, .020, .040	224-3212	STD	224-3257	STD
224-3050	STD, .020, .030, .040	224-3214	STD, .020, .020X, .040X	224-3258	STD
224-3061	STD, .020, .030, .040, .060	224-3214X	STD, .020, .040	224-3258X	STD
224-3062	STD, .020, .030, .040, .060	224-3215	STD	224-3259	STD
224-3064	STD, .020, .030, .040, .060	224-3216	STD	224-3260	STD, .020, .030, .040
224-3065	STD, .020, .030, .040, .060	224-3217	STD	224-3262	STD
224-3066	STD, .020, .030, .040, .060	224-3217X	STD	224-3263	STD
224-3075	STD, .030, .040	224-3218	STD	224-3263X	STD
224-3082	STD, .020, .030, .040, .060	224-3219	STD	224-3264	STD
224-3097	STD, .020, .030, .040, .060	224-3220	STD	224-3265	STD
224-3098	STD, .020, .030, .040, .060	224-3221	STD	224-3265X	STD
224-3099	STD, .020, .030, .040	224-3222	STD	224-3267	STD
224-3101	STD, .020, .030, .040, .060	224-3223	STD	224-3268	STD
224-3102	STD, .020, .030, .040, .060	224-3224	STD	224-3268X	STD
224-3103	STD, .020, .030, .040, .060	224-3225	STD	224-3269	STD
224-3104	STD, .020, .030, .040, .060	224-3226	STD	224-3270	STD
224-3105	STD, .020, .030, .040, .060	224-3227	STD	224-3270X	STD
224-3108	STD, .020, .030	224-3228	STD	224-3271	STD
224-3110	STD	224-3228X	STD	224-3271X	STD
224-3118	STD, .020, .030	224-3229	STD	224-3272	STD
224-3123	STD, .020, .030, .040, .060	224-3230	STD	224-3274	STD, .020, .040, .020X, .040X
224-3145	STD, .020, .030, .040	224-3230X	STD	224-3274X	STD, .020, .040
224-3163	STD, .020, .030, .040	224-3231	STD	224-3275	STD
224-3173	STD, .020, .030, .040, .060	224-3231X	STD	224-3275X	STD
224-3174	STD, .020, .030, .040	224-3232	STD	224-3276	STD
224-3175	STD, .020, .030, .040, .060	224-3233	STD	224-3277	STD
224-3177	STD, .020, .030, .040, .060	224-3234	STD	224-3279	STD, .020, .040
224-3178	STD, .020, .030, .040	224-3235	STD	224-3280	STD
224-3180	STD, .020, .030, .040, .060	224-3235X	STD	224-3281	STD, .020, .040
224-3181	STD, .020, .030, .040	224-3236	STD	224-3282	STD
224-3185	STD	224-3237	STD	224-3284	STD
224-3185X	STD	224-3238	STD	224-3287	STD, .020, .030, .040, .060
224-3186	STD, .020, .030, .040	224-3238X	STD	224-3288	STD
224-3188	STD	224-3239	STD	224-3289	STD
224-3189	STD	224-3239X	STD	224-3290	STD

## OVERSIZE PISTON AVAILABILITY

Part Number	Available Sizes	Part Number	Available Sizes	Part Number	Available Sizes
224-3291	STD	224-3314	STD	224-3406	STD, .010, .020, .030, .040
224-3291X	STD	224-3315	STD	224-3407	STD, .020, .030, .040
224-3292	STD	224-3316	STD, .020, .040	224-3408	STD, .020, .030, .040, .060
224-3293	STD	224-3317	STD, .020, .040	224-3409	STD, .020, .030, .040
224-3294	STD	224-3319	STD, .020, .040	224-3410	STD, .020, .030
224-3295	STD	224-3320	STD, .020, .040	224-3411	STD, .020, .030, .040
224-3296	STD	224-3325	STD	224-3412	STD, .020, .030, .040
224-3297	STD	2243326	STD	224-3413	STD, .020, .030
224-3298	STD	224-3333	STD	224-3414	STD, .020, .030, .040
224-3299	STD	224-3334	STD	224-3417	STD, .020, .030, .040
224-3299X	STD	224-3335	STD	224-3418	STD, .020, .030
224-3301	STD	224-3336	STD	224-3419	STD, .020, .030, .040
224-3305	STD	224-3401	STD, .020, .040	224-3420	STD, .020, .030, .040, .060
224-3307	STD, .020, .030, .040	224-3402	STD, .020, .030, .040, .060	224-3421	STD, .020, .030, .040
224-3308	STD, .020, .030, .040	224-3403	STD, .020, .0300, .040	224-3422	STD, .020, .030, .040
224-3311	STD	224-3404	STD, .020, .030, .040	224-3423	STD, .020, .030, .040
224-3313	STD	224-3405	STD, .020, .030, .040		

## TC OVSZSE PISTON AVAILABILITY

Part Number	Available Sizes	Part Number	Available Sizes	Part Number	Available Sizes
TC1397	STD, .020, .030, .040, .060	TC1916A	STD, .020, .030, .040, .060	TC2222	STD, .020, .030, .040, .060
TC1408	STD, .020, .040, .060	TC1921	STD, .020, .030, .040, .060	TC2225	STD, .020, .030, .040, .060
TC1504	STD, .020, .030, .040, .060	TC1930	STD, .020, .030, .040, .060	TC2226	STD, .020, .030, .040
TC1504A	STD, .030, .040, .060	TC1946	STD, .020, .030, .040, .060	TC2230	STD, .020, .030, .040, .060
TC1527	STD, .020, .030, .040, .060	TC1947	.030, .040, .060, STD, .020	TC2231	STD, .020, .030, .040, .060
TC1529	STD, .020, .030, .040, .060	TC1949	STD, .020, .030, .040, .060	TC2234	STD, .020, .030, .040, .060
TC1544	STD, .020, .030, .040, .060	TC1949A	STD, .020, .030, .040, .060	TC2274	STD, .020, .030, .040
TC1544A	STD, .030, .040, .060	TC1953	STD, .020, .030, .040	TC2275	STD, .020, .030
TC1544B	STD, .030, .040, .060	TC1979	STD, .020, .030, .040	TC2281	STD, .020, .030, .040
TC1563	STD, .020, .030, .040, .060	TC1999	STD, .020, .030, .040, .060	TC2283	STD, .020, .030, .040
TC1563A	STD, .020, .030, .040, .060	TC2001	STD, .020, .030, .040, .060	TC2289	STD, .020, .030, .040
TC1568.020	.020	TC2002	STD	TC2291	STD, .020, .030, .040
TC1568.040	.040	TC2004	STD, .020, .030, .040, .060	TC2304	STD, .020, .030, .040
TC1568.060	.060	TC2007	STD, .020, .030, .040, .060	TC2305	STD, .030
TC1650	STD, .020, .030, .040, .060	TC2007A	STD, .020, .030, .040, .060	TC2310	STD, .020, .030, .040
TC1658	STD, .020, .030, .040, .060	TC2009	STD, .030, .040, .060	TC2311	STD, .020, .030, .040
TC1666	.030, .040, STD, .060	TC2010	STD	TC2312	STD, .020, .030, .040
TC1670	STD, .020, .030, .040, .060	TC2012	STD, .020, .030, .040, .060	TC2314.020	.020
TC1699	STD, .030, .040, .060	TC2012A	STD, .020, .030, .040, .060	TC2314.040	.040
TC1701	STD, .030, .040, .060	TC2015	STD, .030, .040, .060	TC2315	STD, .020, .030, .040
TC1708	STD, .020, .030, .040, .060	TC2016	STD, .020, .030, .040	TC2321	STD, .020, .030, .040, .060
TC1712	STD, .020, .030, .040, .060	TC2034	STD, .020, .030, .040, .060	TC2322	STD, .020, .030, .040, .060
TC1713	STD, .020, .030, .040, .060	TC2034B	STD, .020, .030	TC2322B	STD, .020, .030, .040, .060
TC1715	STD, .020, .030, .040, .060	TC2036	STD, .030, .040, .060	TC2330	STD, .020, .030, .040
TC1730	STD, .020, .030, .040	TC2037	STD, .020, .030, .040, .060	TC2331	STD, .020, .030
TC1735	STD, .020, .030, .040, .060	TC2038	STD, .020, .030, .040, .060	TC2332	STD, .020, .030, .040
TC1737	STD, .030, .040, .060	TC2039	STD, .020, .030, .040, .060	TC2334	STD, .020, .030, .040
TC1740	STD, .020, .030, .040, .060	TC2040	STD, .020, .030, .040, .060	TC2335	STD, .020, .030
TC1746	STD, .030, .040, .060	TC2042	STD, .020, .030, .040, .060	TC2347	STD, .020, .030, .040
TC1747.030	.030	TC2042A	STD, .020, .030, .040, .060	TC2348	STD, .020, .030, .040
TC1747.040	.040	TC2050	STD, .020	TC2349	STD, .020, .030, .040
TC1749	STD, .030, .040, .060	TC2053	STD, .020, .030, .040	TC2350	STD, .020, .030, .040
TC1795	STD, .020, .030, .040, .060	TC2055	STD, .020, .030, .040, .060	TC2351	STD, .020, .030, .040, .060
TC1810	STD, .020, .030, .040, .060	TC2079	STD, .020, .040	TC2353	STD, .020, .030, .040
TC1831	STD, .020, .030, .040, .060	TC2088	STD, .020, .030, .040	TC2357	STD, .020, .030, .040, .060
TC1832.030	.030	TC2093	STD, .020, .030, .040	TC2358	STD, .020, .030, .040
TC1840	STD, .020, .030, .040, .060	TC2099	STD, .020, .030, .040	TC2359	STD, .003, .005, .010, .020, .030, .050
TC1840A	STD, .020, .030, .040, .060	TC2101	STD, .020, .030, .040	TC2374	STD, .020, .030, .040
TC1842	STD, .020, .030, .040, .060	TC2108	STD, .020, .030, .040, .060	TC2375	STD, .020, .030, .040
TC1845	STD, .030, .040, .060	TC2120	STD, .020, .030, .040	TC2384	STD, .020, .030, .040
TC1848	STD, .020, .030, .040, .060	TC2122	STD, .020, .030, .040, .060	TC2511	STD, .020, .030, .040, .060
TC1849	STD, .030, .040, .060	TC2123	STD, .020, .030, .040, .060	TC2517	STD, .020, .030, .040, .060
TC1850	STD, .020, .030, .040, .060	TC2127	STD, .020, .030, .040	TC2552	STD, .020, .030, .040, .060
TC1852	STD, .020, .030, .040, .060	TC2128	STD, .020, .030, .040, .060	TC2553	STD, .030, .040
TC1856	STD, .020, .030, .040, .060	TC2130	STD, .020, .030, .040, .060	TC2554	STD, .020, .030, .040
TC1860	STD, .020, .030, .040, .060	TC2130B	STD, .020, .040	TC2555	STD, .020, .030, .040
TC1863	STD, .020, .030, .040	TC2132	STD, .020, .030, .040, .060	TC2556	STD, .020, .030, .040
TC1866	STD, .030, .040, .060	TC2141	STD, .020, .030, .040, .060	TC2558	STD, .020, .030, .040, .060
TC1869	STD, .030, .040, .060	TC2151	.040, STD, .020, .030	TC2559	STD, .020, .030, .040
TC1870	STD, .020, .030, .040, .060	TC2154	STD, .020, .030	TC2561	STD, .020, .030, .040
TC1873	STD, .030, .040	TC2158	STD, .020, .030, .040, .060	TC2563	STD, .020, .030, .040, .060
TC1882	STD, .030, .040, .060	TC2159	STD, .020, .030, .040, .060	TC2565	STD, .020, .030, .040, .060
TC1884	STD, .030, .040	TC2179	STD, .030, .040, .060	TC2566	STD, .020
TC1885	STD, .030, .040, .060	TC2180	STD, .020, .030, .040, .060	TC2567	STD, .020, .030, .040
TC1889	STD, .020, .030, .040, .060	TC2185	STD, .020, .030, .040, .060	TC2581	STD, .020, .030, .040, .060
TC1894	STD, .020, .030, .040	TC2187	STD, .020, .030, .040, .060	TC2583	STD, .020, .030, .040
TC1895	STD, .030, .040	TC2190	STD, .010, .020, .030, .040, .060	TC2583A	STD
TC1916	STD, .020, .030, .040, .060	TC2192	STD, .020, .030, .040, .060	TC2587	STD, .020, .030, .040, .060

## TC OVERSIZE PISTON AVAILABILITY

Part Number	Available Sizes	Part Number	Available Sizes	Part Number	Available Sizes
TC2694	STD, .020, .030, .040, .060	TC2900	STD, .020, .030, .040	TC3050	STD, .020, .030, .040
TC2694A	STD, .020, .030, .040, .060	TC2902	STD, .020, .030, .040	TC3055	STD, .020, .030, .040
TC2699	STD, .020, .030, .040	TC2904	STD, .030, .040, .060	TC3055A	STD, .020, .030, .040
TC2706	STD, .020, .030, .040, .060	TC2905	STD, .020, .030, .040	TC3057	STD, .020, .030, .040, .060
TC2707	STD, .020, .030, .040	TC2906	STD, .020, .030, .040	TC3061	STD, .020, .030, .040, .060
TC2712	STD, .020, .030	TC2907	STD, .020, .030, .040	TC3062	STD, .020, .030, .040, .060
TC2719	STD, .020, .030, .040, .060	TC2908	STD, .020, .030, .040	TC3064	STD, .020, .030, .040, .060
TC2740	STD, .020, .030, .040, .060	TC2909	STD, .020	TC3065	STD, .020, .030, .040, .060
TC2741	STD, .020, .030, .040, .060	TC2911	STD, .020	TC3066	STD, .020, .030, .040, .060
TC2745	STD, .020, .030, .040, .060	TC2912	STD, .020	TC3072	STD, .020, .030, .040, .060
TC2745A	STD, .020, .030, .040, .060	TC2913.020	.020	TC3075	STD, .030, .040
TC2751.030	.030	TC2914	STD, .020, .030, .040, .060	TC3082	STD, .020, .030, .040, .060
TC2751.060	.060	TC2915	STD, .020, .030, .040	TC3098	STD, .020, .030, .040, .060
TC2754	STD, .020, .030, .040, .060	TC2916	STD, .020, .030, .040	TC3099	STD, .020, .030, .040
TC2755	STD, .020, .030, .040, .060	TC2917	STD, .020, .040	TC3101	STD, .020, .030, .040, .060
TC2756	STD, .020, .030, .040, .060	TC2919.020	.020	TC3102	STD, .020, .030, .040, .060
TC2757	STD, .020, .030, .040	TC2919.030	.030	TC3103	STD, .020, .030, .040, .060
TC2758	STD, .020, .030, .040	TC2919.040	.040	TC3104	STD, .020, .030, .040, .060
TC2759	STD, .020, .030, .040	TC2919.060	.060	TC3105	STD, .020, .030, .040, .060
TC2761	STD, .020, .030, .040	TC2920	STD, .020, .030, .040, .060	TC3108	STD, .020, .030
TC2770	STD, .020, .030, .040, .060	TC2921	STD, .020, .040	TC3110	STD
TC2774	STD, .020, .030, .040	TC2922	STD, .020, .040	TC3118	STD, .020, .030
TC2775	STD, .020, .030, .040, .060	TC2923	STD, .020, .040	TC3123	STD, .020, .030, .040, .060
TC2783	STD, .020, .030, .040	TC2924	STD, .020, .040	TC3163	STD, .020, .030, .040
TC2787.030	.030	TC2927	STD, .020, .040	TC3173	STD, .020, .030, .040, .060
TC2787.060	.060	TC2928	STD, .020, .030, .040	TC3174	STD, .020, .030, .040
TC2792	STD, .020, .030, .040	TC2929	STD, .020, .040	TC3175	STD, .020, .030, .040, .060
TC2797	STD, .010, .020	TC2930	STD, .020, .040	TC3175A	STD, .020, .030, .040, .060
TC2799.030	.030	TC2932	STD, .020, .030, .040	TC3177	STD, .020, .030, .040, .060
TC2799.060	.060	TC2933	STD, .020, .030, .040	TC3178	STD, .020, .030, .040
TC2799.100	.100	TC2934	STD, .020, .030, .040	TC3180	STD, .020, .030, .040, .060
TC2802	STD, .020, .030, .040, .060	TC2935	STD, .020, .040	TC3181	STD, .020, .030, .040
TC2803	STD, .020, .030, .040, .060	TC2938	STD, .020, .030, .040	TC3401	STD, .020, .040
TC2810	STD, .020, .030, .040, .060	TC2940	STD, .030, .040, .060	TC3402	STD, .020, .030, .040, .060
TC2811	STD, .020, .030, .040	TC2944	STD, .020, .030, .040	TC3402A	STD, .020, .030, .040, .060
TC2812	STD, .020, .030, .040	TC2945	STD, .020, .030, .040, .060	TC3403	STD, .020, .030, .040
TC2813	STD, .020, .030, .040, .060	TC2946	STD, .020, .030, .040	TC3404	STD, .020, .030, .040
TC2814	STD, .020, .030, .040	TC2947	STD, .020, .030, .040	TC3405	STD, .020, .030, .040
TC2815	STD, .020, .030, .040	TC2948	STD, .020, .030, .040, .060	TC3406	STD, .010, .020, .030, .040
TC2816	STD, .020, .030, .040	TC2948A	STD, .020, .030, .040, .060	TC3407	STD, .020, .030, .040
TC2817	STD, .020, .030, .040	TC2975	STD, .020, .040	TC3408	STD, .020, .030, .040, .060
TC2840	STD, .030, .040, .060	TC2976	STD, .020, .040	TC3408A	STD, .020, .030, .040, .060
TC2877	STD, .030, .040, .060	TC2977	STD, .020, .040	TC3409	STD, .020, .030, .040
TC2880	STD, .020, .030, .040	TC2978	STD, .020, .040	TC3410	STD, .020, .030
TC2881	STD, .020, .040	TC2979	STD, .020, .040	TC3411	STD, .020, .030, .040
TC2882	STD, .020, .030, .040	TC2980	STD, .020, .040	TC3412	STD, .020, .030, .040
TC2885	STD, .020, .030, .040, .060	TC2981	STD, .020, .040	TC3413	STD, .020, .030
TC2887	STD, .010, .020, .030, .040	TC2982	STD, .020, .040	TC3414	STD, .020, .030, .040
TC2888	STD, .020, .030, .040	TC2983	STD, .020, .040	TC3414A	STD, .020, .030, .040
TC2889	STD, .020	TC2984	STD, .020, .040	TC3417	STD, .020, .030, .040
TC2890	STD, .020, .030, .040	TC2985	STD, .020, .040	TC3418	STD, .020, .030
TC2891	STD, .020, .030, .040, .060	TC2986	STD, .020, .040	TC3418A	STD, .020, .030
TC2893	STD, .020, .030, .040	TC2987	STD, .020, .040	TC3419	STD, .020, .030, .040
TC2894	STD, .020, .030, .040	TC2988	STD, .020, .040	TC3420	STD, .020, .030, .040, .060
TC2895	STD, .020, .030, .040	TC2989	STD, .020, .030, .040	TC3421	STD, .020, .030, .040
TC2896	STD, .020, .030, .040	TC2990	STD, .030, .040, .060	TC3422	STD, .020, .030, .040
TC2897	STD, .020, .030, .040	TC2991	STD, .010, .020, .030, .040	TC3423	STD, .020, .030, .040
TC2898	STD, .020, .030, .040	TC2992	STD, .020, .030, .040, .060		



## PISTON CLEARANCE CHART-SLEEVE ASSEMBLIES

Sleeve Assembly Number	Nominal Bore Diameter	Minimum Skirt Clearance	Sleeve Assembly Number	Nominal Bore Diameter	Minimum Skirt Clearance
226-1187	3.4375	.001	226-1550	4.125	.0044
226-1208	3.1875	.001	226-1551	4.625	.009
226-1212	3.1871	.001	226-1556	4.501	.0056
226-1220	4.250	.0071	226-1557	4.625	.0095
226-1254	3.900	.0015	226-1571	5.500	.011
226-1255	3.250	.003	226-1579	4.625	.005
226-1259	3.375	.003	226-1581	4.250	.004
226-1281	4.000	.002	226-1583	4.016	.0041
226-1283	3.750	.002	226-1584	4.015	.0026
226-1298	3.5625	.0033	226-1585	4.300	.005
226-1299	3.5625	.0033	226-1589	4.300	.005
226-1312	3.250	.003	226-1590	4.300	.005
226-1313	3.375	.002	226-1591	4.375	.0055
226-1320	4.250	.007	226-1593	3.875	.005
226-1334	3.900	.005	226-1594	4.375	.0055
226-1336	3.375	.001	226-1604	3.8125	.0015
226-1339	4.125	.0031	226-1606	4.300	.005
226-1340	3.811	.0035	226-1607	5.375	.006
226-1347	4.375	.005	226-1611	3.625	.0015
226-1361	3.5625	.004	226-1625	4.321	.005
226-1377	3.250	.001	226-1628	5.1245	.011
226-1378	3.6875	.0045	226-1629	4.250	.004
226-1379	3.6875	.005	226-1633	4.250	.0049
226-1401	4.1245	.003	226-1636	3.875	.0053
226-1402	3.4375	.0035	226-1637	6.250	.0125
226-1404	3.125	.002	226-1639	3.875	.0025
226-1433	3.500	.0015	226-1643	5.4998	.0123
226-1438	4.625	.007	226-1646	5.4998	.0123
226-1470	4.250	.0026	226-1647	4.125	.004
226-1471	4.250	.0052	226-1648	5.250	.0066
226-1477	3.8752	.0047	226-1649	3.625	.0005
226-1478	3.8752	.0047	226-1656	4.000	.0037
226-1484	3.438	.003	226-1657	4.5125	.0045
226-1499	4.7493	.0043	226-1658	4.625	.005
226-1500	4.125	.0045	226-1659	4.625	.0052
226-1504	4.876	.0062	226-1663	4.625	.0055
226-1506	5.1245	.0105	226-1665	4.190	.0022
226-1508	3.375	.0031	226-1667	3.875	.0035
226-1509	3.6893	.0058	226-1668	4.5625	.004
226-1512	3.6893	.0035	226-1669	4.190	.0037
226-1521	3.875	.0036	226-1674	3.752	.0032
226-1522	3.859	.001	226-1675	3.5625	.0033
226-1523	3.859	.001	226-1676	4.625	.0095
226-1524	3.859	.002	226-1682	4.875	.0056
226-1525	3.859	.002	226-1683	4.875	.0037
226-1526	3.859	.0035	226-1684	4.875	.0052
226-1527	4.876	.009	226-1685	4.501	.0065
226-1527	3.859	.0025	226-1686	4.750	.0065
226-1532	4.876	.0068	226-1689	4.500	.0045
226-1537	4.4375	.0055	226-1690	6.250	.0082
226-1538	4.4375	.0085	226-1691	5.400	.0075
226-1539	5.125	.0095	226-1692	5.400	.0075
226-1540	4.016	.0042	226-1693	5.400	.0095
226-1543	4.321	.0051	226-1694	5.400	.0085
226-1544	4.625	.0095	226-1695	4.750	.006
226-1549	3.875	.003	226-1697	5.750	.0085

## PISTON CLEARANCE CHART-SLEEVE ASSEMBLIES

Sleeve Assembly Number	Nominal Bore Diameter	Minimum Skirt Clearance	Sleeve Assembly Number	Nominal Bore Diameter	Minimum Skirt Clearance
226-1698	5.400	.0075	226-1795	5.4998	.0123
226-1699	5.400	.0075	226-1796	5.4998	.0143
226-1700	4.625	.005	226-1798	4.250	.0035
226-1703	5.500	.0082	226-1799	4.125	.003
226-1704	4.560	.0022	226-1808	4.300	.005
226-1705	5.400	.0075	226-1809	4.750	.006
226-1706	4.560	.002	226-1810	155mm (6.0132)	.0093
226-1707	5.400	.0095	226-1811	3.875	.0030
226-1708	4.750	.0065	226-1812	3.875	.0030
226-1709	4.750	.0066	226-1815	155mm (6.1032)	.0093
226-1711	4.5625	.0065	226-1816	4.750	.005
226-1712	5.250	.0075	226-1819	4.250	.0035
226-1713	4.190	.0033	226-1820	4.750	.0034
226-1716	5.125	.0059	226-1821	5.500	.0078
226-1717	4.000	.0037	226-1822	5.500	.0078
226-1718	4.876	.0049	226-1826	4.250	.0034
226-1719	5.125	.0059	226-1827	4.190	.0033
226-1721	5.750	.008	226-1828	4.190	.0033
226-1723	4.250	.0051	226-1829	4.300	.005
226-1733	5.400	.0075	226-1830	4.0095	.004
226-1734	5.400	.0105	226-1831	5.500	.0078
226-1737	4.4375	.0055	226-1832	5.500	.0078
226-1738	4.8391	.0061	226-1833	5.500	.0068
226-1739	4.8391	.0061	226-1834	5.500	.0068
226-1741	4.500	.006	226-1835	5.500	.0078
226-1743	5.500	.0012	226-1836	5.500	.0078
226-1745	5.4998	.0082	226-1837	5.500	.0078
226-1746	5.4998	.0083	226-1838	5.500	.0078
226-1747	5.4998	.0123	226-1839	5.500	.0082
226-1748	5.4998	.0143	226-1840	5.500	.0082
226-1749	5.4998	.0083	226-1841	5.500	.0082
226-1750	5.500	.0082	226-1842	5.500	.0082
226-1751	3.8752	.0047	226-1843	5.4998	.0078
226-1755	5.4998	.0083	226-1844	6.250	.0082
226-1759	5.4998	.0082	226-1845	4.625	.0055
226-1760	5.4998	.0082	226-1846	4.625	.0055
226-1766	3.875	.00362	226-1847	5.500	.0143
226-1767	4.250	.0039	226-1848	5.4889	.0123
226-1768	4.500	.0055	226-1849	5.375	.006
226-1769	5.4998	.0143	226-1850	4.300	.003
226-1770	5.4998	.0083	226-1854	7.500	.007
226-1771	5.500	.0082	226-1856	5.4998	.0083
226-1772	5.4998	.0083	226-1857	5.500	.0082
226-1773	5.4998	.0082	226-1858	4.250	.004
226-1774	5.4998	.0083	226-1859	5.375	.0055
226-1775	5.4998	.0123	226-1860	5.000	.0078
226-1776	5.4998	.0123	226-1861	4.750	.004
226-1777	3.875	.0032	226-1862	5.4998	.0083
226-1779	4.250	.004	226-1863	5.500	.0133
226-1781	4.250	.004	226-1865	5.500	.0118
226-1783	5.125	.0054	226-1866	5.500	.0118
226-1786	3.875	.0030	226-1867	6.250	.00851
226-1787	3.875	.0020	226-1868	4.625	.0055
226-1792	5.498	.0083	226-1869	5.4998	.0123
226-1793	5.500	.0078	226-1870	5.4998	.0083
226-1794	5.500	.0082	226-1873	5.4998	.0082

## PISTON CLEARANCE CHART-SLEEVE ASSEMBLIES

Sleeve Assembly Number	Nominal Bore Diameter	Minimum Skirt Clearance	Sleeve Assembly Number	Nominal Bore Diameter	Minimum Skirt Clearance
226-1874	5.4998	.0083	226-1884	5.4998	.0083
226-1875	6.250	.0125	226-1888	5.4998	.083
226-1876	7.000	.010	226-1889	4.750	.0033
226-1877	4.625	.0052	226-1890	4.750	.0033
226-1878	7.500	.0071	226-1891	4.300	.005
226-1879	4.750	.007	226-1892	6.700	.013
226-1880	5.4998	.0082	226-1894	4.490	.0056
226-1881	4.500	.0051	226-1895	4.750	.004
226-1882	4.750	.006	226-1896	5.375	.0055
226-1883	5.500	.0082			

## PISTON CLEARANCE CHART—REBORE KITS

Rebore Kit Number	Nominal Bore Diameter	Minimum Skirt	Rebore Kit Number	Nominal Bore Diameter	Minimum Skirt
224-2512	4.500	.0068	224-3024.045, .090	4.6875	.0060
224-2513	4.500	.0066	224-3040	4.4013	.0058
224-2738	4.500	.0066	224-3047	4.0165	.0052
224-2993	3.900	.0015	224-3048	3.900	.0056
224-2997	4.252	.0025	224-3186	4.4007	.0052
224-2998	4.252	.0032	224-3190	4.510	.0046
224-3000	4.000	.0041	224-3192	4.200	.0020
224-3000	4.000	.0055	224-3278	4.500	.0065
224-3002	4.0165	.0056	224-3279	4.500	.0075
224-3003	4.0165	.0056	224-3281	4.500	.0066
224-3004	4.110	.0047			

## PISTON CLEARANCE CHART—ALUMINUM PISTONS

Piston Number	Nominal Bore Diameter	Minimum Skirt Clearance	Head Type	Valve Reliefs
A-928P	3.250	.003	Flat	
224-1020	3.900	.0015	Flat	
224-1401	4.125	.0035	Flat	
224-1402	4.2436	.0035	Flat	
224-1404	3.1245	.002	Flat	
224-1426	3.5625	.0033	Step .437	
224-1427	3.5625	.0033	Step .594	
224-1444	4.250	.0045	Flat	
224-1451	3.900	.0056	Cup .563 X 2.302	
224-1457	3.8125	.0015	Cup .538 X 2.49	2
224-1463	4.375	.005	Flat	
224-1476	3.5625	.004	Flat	
224-1509	3.250	.001	Contour .125 Step	
224-1510	3.6893	.0053	Cup .218 X 1.58	2
224-1511	3.6893	.0058	Cup .288 X 2.06	2
224-1538	5.125	.0105	Cup .735 X 4.235	4
224-1549	3.625	.0025	Flat	
224-1560	4.6265	.0045	Flat	
224-1561	4.6265	.007	Flat	
224-1646	4.125	.0031	Flat	
224-1676	4.250	.0025	Cup .570 X 3.00	
224-1680	4.250	.0052	Cup .463 X 3.5	
224-1766	3.438	.003	Cup .500 X 2.63	
224-1838	3.375	.0031	Cup .310 X 2.50	
224-1859	4.876	.0062	Cup .855 X 3.32	2
224-1901	4.200	.002	Cup 1.02 X-2.98	2
224-1922	4.876	.0068	Cup .855 X 3.31	2
224-1927X	4.500	.0068	Cup .830 X 2.50	
224-2023	3.859	.002	Cup .213 X 2.47	
224-2024	4.015	.0026	Cup .839 X 2.117	
224-2025	4.017	.005	Cup .647 X 2.32	
224-2026	3.859	.002	Cup .360 X 3.00	
224-2027	4.300	.005	Cup .740 X 2.58	2
224-2028	4.300	.005	Cup .913 X 2.58	2
224-2029	4.300	.005	Cup .796 X 2.58	2
224-2030	4.375	.0055	Cup .820 X 2.50	2
224-2031	4.501	.005	Cup .829 X 2.476	2
224-2091	5.500	.011	Cup .402 X 3.937	
224-2176	4.625	.0055	Cup .812 X 2.680	2
224-2103	4.300	.005	Cup .762 X 2.58	2
224-2112	4.250	.004	Cup .821 X 2.40	
224-2124	4.625	.009	Cup .427 X 2.95	
224-2140	4.250	.004	Cup .920 X 2.400	2
224-2143	5.4998	.0123	Cup .810 X 3.829	4

## PISTON CLEARANCE CHART—ALUMINUM PISTONS

Piston Number	Nominal Bore Diameter	Minimum Skirt Clearance	Head Type	Valve Reliefs
224-2144	5.4998	.0123	Cup .810 X 3.829	4
224-2160	4.000	.0037	Cup .578 X 2.604	2
224-2168	4.5625	.0045	Cup .807 X 2.705	2
224-2169	4.5625	.004	Cup .866 X 2.500	
224-2170	4.125	.004	Cup .890 X 2.312	2
224-2171	4.625	.005	Cup .791 X 2.68	2
224-2172	4.625	.0052	Cup .865 X 2.680	2
224-2186	4.190	.0027	Cup .890 X 2.37	
224-2188X	4.500	.0066	Cup .828 X 2.498	
224-2190	4.000	.0041	Flat	2
224-2191	4.1922	.0022	Cup .888 X 2.369	
224-2194	3.5625	.0035	Contour .312 Step	
224-2195	3.752	.0032	Contour .125 Step	
224-2197	5.500	.0082	Cup .850 X 3.8061	4
224-2200	4.875	.0056	Cup .710 X 3.2866	2
224-2201	4.875	.0046	Cup .713 X 3.303	2
224-2202	4.875	.0052	Cup .750 X 3.600	2
224-2229	4.625	.005	Cup .791 X 2.680	2
224-2236	4.560	.0022	Cup .820 X 2.700	2
224-2239	4.560	.0040	Cup .770 X 2.700	2
224-2240	5.319	.007	Flat	
224-2243	4.750	.0066	Cup .956 X 2.500	2
224-2245	4.750	.0065	Cup 1.020 X 2.495	2
224-2246	4.1922	.0033	Cup .912 X 2.369	
224-2251	4.252	.0032	Cup .652 X 2.559	2
224-2252	4.252	.0025	Cup .709 X 2.293	2
224-2255	4.000	.0037	Cup .764 X 2.240	2
224-2256	5.125	.0059	Cup .824 X 3.000	2
224-2257	5.125	.006	Cup .860 X 3.000	2
224-2258	4.876	.0049	Cup .752 X 3.5386	4
224-2261	4.000	.0055	Flat	2
224-2262	5.4998	.0083	Cup .810 X 3.829	4
224-2264	5.4998	.0083	Cup .848, X 3.831	4
224-2269	5.4998	.0083	Cup .810 X 3.829	4
224-2271	4.921	.0057	Cup .466 X 3.541	
224-2323	5.500	.0012	Cup .395 X 4.125	
224-2339	5.4998	.0083	Cup .860 X 3.838	4
224-2340	5.500	.0082	Cup .825 X 3.8061	4
224-2341	5.4998	.0143	Cup .760 X 3.7843	4
224-2342	5.4998	.0123	Cup .810 X 3.8290	4
224-2343	5.4998	.0083	Cup .945 X 3.840	4
224-2344	5.4998	.0082	Cup .900 X 3.8061	4
224-2352	3.875	.0032	Cup .561 X 2.560	
224-2369	3.875	.0032	Cup .588 X 2.477	
224-2568X	4.500	.0066	cup .828 X 2.498	
224-2573	4.0165	.0056	Cup .697 X 2.328	
224-2574	4.0165	.0052	Cup .760 X 2.322	
224-2575	4.0165	.0056	Cup .685 X 2.519	
224-2577	4.4013	.0058	Cup .730 X 2.500	
224-2739	4.250	.0035	Cup .738 X 2.500	
224-2743	5.500	.0078	Cup .624 X 4.095	4
224-2748	3.187	.001	Dome .280	
224-2784	4.300	.005	Cup .864 X 2.580	2
224-2785	4.250	.0034	Cup .570 X 3.0027	2
224-2786X	4.500	.0066	Cup .828 X 2.498	4
224-2790	4.190	.0033	Cup .740 X 2.300	
224-2791	4.190	.0033	Cup .740 X 2.300	
224-2796	4.300	.005	Cup .915 X 2.580	2
224-2807	4.510	.0046	Cup .751 X 2.215	2
224-2818	5.500	.0082	Cup .760 X 4.190	4
224-2819	5.500	.0078	Cup .880 X 4.190	4
224-2820	5.500	.0068	Cup .825 X 4.190	4

## PISTON CLEARANCE CHART—ALUMINUM PISTONS

Piston Number	Nominal Bore Diameter	Minimum Skirt Clearance	Head Type	Valve Reliefs
224-2821	5.500	.0078	Cup .900 X 4.190	4
224-2822	5.500	.0078	Cup .810 X 4.190	4
224-2823	5.500	.0082	Cup .850 X 4.190	4
224-2847	3.4375	.001	Flat	
224-2937	4.000	.002	Flat	
224-3012	4.490	.0056	Cup .984 X 2.189	
224-3013	3.859	.0035	Cup .654 X 2.32	
224-3014	4.125	.0045	Cup .687 X 2.47	2
224-3015X	4.750	.0034	Cup .780 X 3.350	2
224-3016	6.1032	.0093	Cup .913 X 4.8331	4
224-3017	4.125	.0044	Cup .786 X 2.266	2
224-3018	5.250	.0075	Cup .881 X 3.560	
224-3022X	6.250	.0082	Cup .830 X 5.78	2 Heat Plug
224-3023X	5.400	.0085	Cup .656 X 3.700	
224-3025	3.375	.001	Flat	
224-3026X	6.250	.0082	Cup .830 X 5.78	2 Heat Plug
224-3027	5.125	.0015	Cup .357 X 3.70	
224-3033	4.625	.0055	Flat	4
224-3034X	4.750	.0106	Cup .5525 X 4.000	2 Heat Plug
224-3039	4.016	.0041	Cup .854 X 2.117	
224-3044	6.250	.0085	Cup .541 X 4.345	
224-3185X	5.750	.0085	Cup .864 X 5.066	2. Heat Plug
224-3189X	5.750	.008	Cup .864 X 5.066	4
224-3193	3.375	.003	Flat	
224-3194	3.375	.002	Cup .218 X 2.50	
224-3195	4.125	.003	Cup .563 X 3.88	
224-3196	3.250	.003	Flat	
224-3197	3.500	.0015	Flat	
224-3200	4.625	.007	Cup .250 X 2.37	
224-3201	6.250	.00851	Flat	
224-3202X	4.501	.0065	Cup .489 X 3.65	2
224-3203	5.375	.0055	Flat	
224-3204	4.250	.0035	Flat	
224-3205	5.375	.0055	Flat	
224-3206	3.750	.002	Flat	
224-3207	4.625	.0055	Flat	
224-3208	4.4375	.0085	Cup .271 X 3.30	4
224-3209	4.4375	.0055	Cup .359 X 3.25	4
224-3210	4.7493	.0043	Cup .940 X 2.50	
224-3211	3.875	.0025	Cup .783 X 2.168	
224-3212	4.321	.0051	Cup .754 X 2.473	2
224-3213X	4.500	.0065	Cup 614 X 2.50	
224-3214X	4.500	.0075	Cup .700 X 2.50	
224-3215	4.501	.0056	Cup .848 X 2.47	2
224-3216	4.625	.0095	Cup .354 X 2.96	4
224-3217X	4.750	.0065	Cup .562 X 4.00	2
224-3218	3.625	.0015	Flat	
224-3219	3.875	.0036	Cup .770 X 2.1123	2
224-3220	5.1245	.0100	Cup .735 X 3.953	2
224-3221	3.875	.003	Cup .658 X 2.12	2
224-3222	7.000	.010	Flat	
224-3223	4.625	.0095	Cup .394 X 3.15	
224-3224	4.375	.0055	Cup .913 X 2.45	2
224-3225	3.875	.005	Cup .778 X 2.27	2
224-3226	5.375	.006	Cup .746 X 3.50	4
224-3227	3.875	.0053	Cup .660 X 2.122	2
224-3228X	4.500	.0045	Cup .478 X 3.67	2
224-3229	3.875	.002	Cup .578 X 2.50	
224-3231X	6.250	.0125	Flat	
224-3232	4.321	.005	Cup .750 X 2.470	2
224-3233	5.375	.006	Cup .850 X 3.500	4
224-3234	4.625	.0095	Cup .400 X 3.151	4

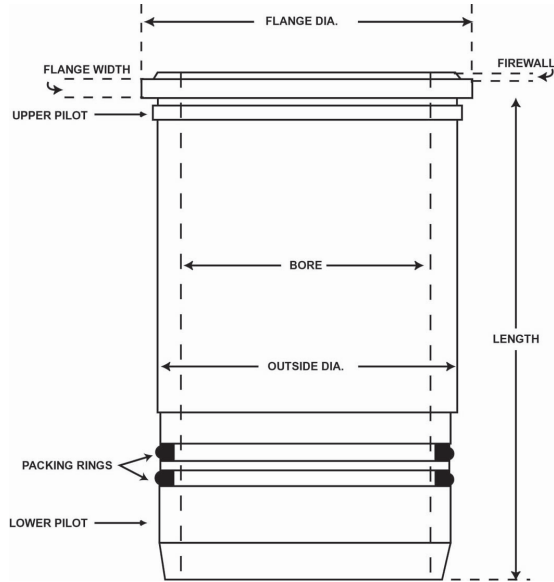
## PISTON CLEARANCE CHART—ALUMINUM PISTONS

Piston Number	Nominal Bore Diameter	Minimum Skirt Clearance	Head Type	Valve Reliefs
224-3235X	5.400	.0085	Cup .729 X 3.83	4 Heat Plug
224-3236	3.625	.0005	Flat	
224-3237	5.251	.0066	Cup .862 X 3.518	
224-3238X	5.400	.0075	Cup .606 X 3.700	
224-3239X	5.400	.0075	Cup .641 X 3.750	4 Heat Plug
224-3230X	6.250	.0125	Flat	
224-3241X	5.400	.0075	Cup .664 X 3.700	
224-3242	4.4375	.0065	Cup 1.182 X 2.260	
224-3243	4.4375	.0055	Cup .735 X 3.000	
224-3244X	5.400	.0105	Cup .700 X 3.700	
224-3245X	5.400	.0085	Cup .664 X 3.700	
224-3246	7.500	.007	Flat	
224-3247	7.500	.0071	Flat	
224-3248X	4.750	.007	Cup .470 X 3.615	2
224-3249	5.4998	.0083	Cup .875 X 3.8939	4
224-3250	3.875	.0030	Cup .578 X 1.840	
224-3251X	4.750	.006	Cup .555 X 4.000	2
224-3252X	4.750	.006	Cup .556 X 4.000	4
224-3253	4.250	.004	Cup .720 X 2.500	
224-3254	3.875	.0035	Cup .767 X 2.30	2
224-3255	3.875	.003	Cup .755 X 2.400	
224-3256	6.1032	.0093	Cup .630 X 5.1420	4
224-3257	4.250	.004	Cup .585 X 2.838	
224-3258X	4.750	.005	Cup .484 X 4.06	4 Heat Plug
224-3259	3.875	.0035	Cup .948 X 2.210	
224-3260	4.4007	.0052	Cup .813 X 2.249	
224-3261X	4.750	.0033	Cup .780 X 3.350	2
224-3262	4.0095	.004	Cup .765 X 2.2657	2
224-3263X	4.750	.0033	Cup .705 X 3.350	2
224-3264	4.2955	.005	Cup .864 X 2.580	2
224-3265X	6.700	.013	Cup .552 X 6.091	
224-3266	4.110	.0047	Flat	2
224-3267	6.250	.0085	Cup .575 X 4.548	
224-3268X	5.400	.0055	Cup .665 X 3.700	
224-3269	5.500	.0137	Cup .500 X 4.123	
224-3271X	4.750	.004	Flat	
224-3272	4.300	.003	Cup .977 X 2.580	2
224-3275X	5.400	.0085	Cup .227 X 4.963	4 Heat Plug
224-3270X	4.750	.004	Cup .375 X 3.388	

## PISTON CLEARANCE CHART—CAST IRON PISTONS

Piston Number	Nominal Bore Diameter	Minimum Skirt Clearance	Head Type	Valve Reliefs
224-2469	4.251	.0071	Cup .465 X 3.3444	
224-2260	4.250	.0051	Cup .422 X 3.342	
224-2272	4.8391	.0061	Cup .500 X 3.805	
224-2337	3.8752	.0047	Cup .436 X 3.25	
224-2360	4.250	.0039	Cup .440 X 3.357	
224-2446	2.625	.0025	Flat	
224-2481	4.250	.007	Cup .468 X 3.56	
224-2485	4.250	.0049	Cup .442 X 3.50	
224-2486	3.8752	.0047	Cup .484 X 2.710	
224-3029	10.000	.009	Step 1.497	
224-3030	10.000	.009	Step 1.642	
224-3282	3.8752	.0047	Cup .421 X 3.0875	

# CYLINDER SLEEVES



Part No.	No. Cyl.	Flange		Pilot	Sleeve O.D. At			Fire Wall	O-Ring Kits
		O.D.	Width		Barrel	Seal	Length		
226-4114	4	5.127	.188		4.750	4.750	11.830	.044	
226-4118	6	4.052	.189		3.689		7-9/16	No	
226-4124	4-6	4.997	.252	4.745	4.750	4.658	9-25/32	.030	223-7125
226-4125	4	4.745	.247	4.528	4.375	4.462	8.750	No	223-7107
226-4126	4	4.458	.247	4.333	4.310	4.274	7-3/8	.038	223-7137
226-4132	4	4.109	.248	3.904	3.885	3.841	7-3/16	No	223-7112
226-4134	4	3.782	.187	3.551	3.563	3.563	8-5/16	No	
226-4138	4	3.9994	.248	3.776	3.703	3.716	6-9/16	No	223-7103
226-4139	4	3.838	.228	3.595	3.555	3.311	6-7/8	No	223-7113
226-4140	4	4.350	.187	4.097	4.1255		10-1/8	No	
226-4142	4-6	5.1275	.252	4.965	4.921	4.8765	10.22	.030	223-7167
226-4150	4	3.815	.247	3.640	3.600	3.600	6.940	No	
226-4156	4-6	3.980	.250	3.912	3.873	3.840	8-1/16	No	223-7129
226-4158	4-6-12	6.127	.439	5.807	5.730	5.746	11-7/8	.070	223-7105
226-4171	4	3.838	.228		3.595	3.467	7.000	No	223-7118
226-4172	4-6	4.165	.1875		3.8115		7-9/16	.038	
226-4176	4	3.838	.228	3.600	3.580	3.437	7-1/16	No	223-7118
226-4184	4-6	5.062	.253	4.814	4.620	4.502	8.000	.040	
226-4186	6	4.871	.257	4.676	4.635	4.605	7-3/8	.033	223-7133
226-4187	4	3.740	.181		3.651		6.921	No	
226-4188	4	3.408	.061		3.368	3.368	6.500	No	
226-4190	6	5.337	.187		5.157		11-11/64	.040	
226-4199	6	6.219	.465	5.872	5.800	5.779	12-3/4	.036	223-7128
226-4208	4	3.4075	.061		3.3685		6-1/2	No	
226-4212	4	3.3625	.040		3.269		6-1/2	No	
226-4218	3-4-6	3.8055	.151		3.6885	3.6885	8.500	No	
226-4220	2-3-4-6	4.771	.251		4.626		11.120	No	
226-4225	3-4	3.807	.044		3.688	3.688	8.500	No	
226-4229	6	5.3375	.187		5.0946		11-11/64	.040	
226-4234	4-6	4.187	.145		4.06304	4.06304	8.907	.038	
226-4251	4	4.477	.188		4.243	4.251	10.130	No	
226-4254	4	4.241	.181		4.1015		6.924	No	
226-4255	4	3.838	.228	3.600	3.580	3.436	7-1/16	No	223-7118
226-4267	4							No	



## CYLINDER SLEEVES

Part No.	No. Cyl.	Flange		Pilot	Sleeve O.D. At			Fire Wall	O-Ring Kits
		O.D.	Width		Barrel	Seal	Length		
226-4268	4	3.998	.188		3.752		8-5/16	No	
226-4279	4							No	
226-4281	4	4.350	.187		4.1255		10-1/8	No	
226-4312	4	3.815	.247	3.640	3.625	3.615	6-15/16	No	223-7112
226-4313	4	3.820	.246	3.700	3.671	3.682	6-15/16	No	223-7112
226-4402	4	3.783	.1875		3.5625		8-5/16	No	
226-4404	4	3.8375	.228	3.5925	3.552	3.311	6-7/8	No	223-7113
226-4409	4	4.242	.181	4.0995	4.101		6-15/16	No	
226-4410	6	5.000	.319	4.812	4.685	4.750	9-1/2	.048	223-7165
226-4411	4	5.125	.253	4.876	4.810	4.628	7.990	.040	223-7136
226-4413	4-6	5.125	.253	4.876	4.8125	4.628	9-1/8	.040	223-7136
226-4414	6	6.565	.355	6.297	6.200	6.121	11.345	.070	223-7077
226-4415	2-3-4	4.782	.253	4.518	4.468	4.4855	9-27/32	.048	223-7140
226-4416	4-6	5.176	.251	4.919	4.840	4.626	9-1/8	.024	223-7199
226-4417	4-6	3.980	.2498	3.912	3.839	3.839	8-1/16	No	223-7143
226-4419	4-6-12	6.127	.439	5.806	5.750	5.745	11-7/8	.070	223-7142
226-4424	4							No	
226-4426	6	4.364	.104		4.311		8-19/32	No	
226-4432	6	5.351	.191		5.095		10-15/16	.030	
226-4434	6	4.627	.319	4.437	4.310	4.375	8-1/8	.045	223-7147
226-4437	4-6	5.251	.3163	5.031	4.937	4.968	10-13/16	.044	223-7159
226-4438	4-6	3.873	.069		3.814		7-39/64	No	
226-4439	6	3.930	.104		3.877		7-9/16	No	
226-4442	3-4-6	4.737	.101		4.5047		8.200	No	
226-4444	3-4	4.8415	.238	4.5285	4.450	4.2365	7.140	.030	223-7164
226-4446	3-4-6	4.920	.238	4.685	4.637	4.371	7.720	.0285	223-7156
226-4448	6	5.245	.352	4.952	4.867	4.815	9.380	.0405	223-7168
226-4449	4-6	5.173	.252	4.966	4.920	4.876	10.22	.047	223-7167
226-4450	6	5.465	.352	5.152	5.126	5.057	8-25/32	.063	223-7153
226-4452	4	4.997	.250	4.821	4.625	4.543	9.780	.033	223-7125
226-4454	4	4.537	.247	4.333	4.315	4.2745	7-3/8	.038	223-7137
226-4455	4-6	5.374	.252	5.152	5.100	5.068	10.210	.035	223-7170
226-4456	8	6.5025	.356	6.230	6.178	6.102	8.620	.070	223-7158
226-4459	6	4.5625	.1225		4.469		8-11/16	No	
226-4462	6-8	5.403	.125	5.187	5.170	5.092	6.440	.0473	223-7155
226-4463	3-4	4.8385	.238	4.5285	4.440	4.2365	7.130	.030	223-7163
226-4464	4-6-8	4.771	.251		4.6255		11-1/8	No	
226-4465	4-6-8-12	6.985	.499	6.7435	6.560	6.535	15.000	No	223-7115
226-4465X	4-6-8-12	6.985	.499	6.744	6.640	6.616	15.000	.0435	
226-4466	4-6-8	4.771	.251		4.6255		11-1/B	No	
226-4467	6-8	5.545	.311	5.358	5.335	5.215	11.020	.047	223-7186
226-4470	6-8	5.545	.311	5.3585	5.3355	5.215	11.020	.047	223-7186
226-4472	4	4.957	.238	4.750	4.725	4.555	8.580	.0325	223-7199
226-4473	6	5.317	.323	5.083	5.045	4.925	9.110	.047	223-7202
226-4474	4	4.526	.245	4.255	4.323	4.274	7.330	.038	223-7177
226-4475	4-6	5.044	.252	4.822	4.690	4.658	9.950	.0473	223-7125
226-4476	6	5.415	.252	5.153	5.100	5.066	10.210	.036	223-7175
226-4477	6	6.585	.365	6.296	6.200	6.121	11-1/4	.070	223-7077
226-4479	4							No	
226-4480	6	5.726	.375	5.502	5.458	5.436	9.800	.030	223-7180
226-4481	6	5.967	.375	5.741	5.700	5.5285	9.800	.030	223-7182
226-4482	6	5.967	.375	5.742	5.700	5.528	9.800	.040	223-7182
226-4485	6	6.625	.501	6.251	6.185	6.1225	12-7/16	.047	223-7144
226-4486	6	6.585	.3755	6.337	6.200	6.121	11.275	.070	223-7077
226-4487	8				4.690		7.750	No	
226-4489	3-4-6	4.9567	.2375	4.75	4.72554	4.5552	7.752	.032	223-7199

## CYLINDER SLEEVES

Part No.	No. Cyl.	Flange		Pilot	Sleeve O.D. At			Fire Wall	O-Ring Kits
		O.D.	Width		Barrel	Seal	Length		
226-4490	3-4-6				4.118		7.875	No	
226-4491	4-6	4.559	.3455	4.343	4.290	4.2765	7.620	.032	223-7197
226-4492	6	7.310	.5572	7.026	6.950	6.927	12.800	.057	223-7190
226-4493	4-6	5.625	.405	5.4525	5.350	5.290	10.000	.042	223-7152
226-4493X	4-6	5.625	.405	5.451	5.350	5.289	10.000	.042	
226-4495	4-6	5.123	.184		4.751		11-3/4	.043	
226-4496	6	5.2335	.550	5.219	5.000	4.840	9.330	.048	223-7201
226-4497	6	7.410	.5265	7.094	7.035	6.978	12.000	.070	223-7183
226-4498	6	7.366	.440	6.943	6.865	6.996	14-7/16	No	223-7104
226-4499	6	4.559	.251	4.345	4.255	4.279	7.440	.032	223-7162
226-4500	4					3.095	6.500		
226-4501	8	5.403	.305	5.187	5.170	5.090	7.550	.047	223-7155
226-4503	6	6.180	.380		5.855	5.871	12-1/2	No	223-7194
226-4505	6-8	7.500	.505	7.2433	7.000	7.040	15.000	.041	223-7124
226-4505X	6-8	7.500	.505	7.243	7.045	7.119	15.000	.042	
226-4506	6-16	6.500	.350	6.243	6.140	5.910	10.760	.041	223-7195
226-4506X	6-8-12	6.501	.350	6.243	6.140	6.053	10.780	.041	
226-4507	4	3.740	.181		3.651		6.920	No	
226-4508	4-6						8.600	No	
226-4509	4	4.230				4.103	8.948	.020	
226-4510	8				4.690		7.747	No	
226-4511	4	3.367	.045		3.2694	3.2694	6.500	No	
226-4512	4	3.993	.2465	3.778	3.765	3.716	7-3/16	No	223-7112
226-4513	4-6	4.557	.251	4.342	4.250	4.276	7-5/16	No	223-7112
226-4514	4	4.7445	.249	4.528	4.500	4.466	8-3/4	No	223-7101
226-4515	6-8	11.608	.621	11.247	11.125	11.123	23.000	No	223-7121
226-4516	4-6	4.997	.252	4.821	4.750	4.668	9-25/32	.030	223-7125
226-4517	6	5.430	.3155		5.135	5.122	11-5/16	No	223-7131
226-4518	4-6	5.480	.404	5.3072	5.145	5.188	10.360	.044	223-7132
226-4518X	4-6	5.4835	.404	5.307	5.135	5.187	10-11/32	.044	
226-4519	4-6	5.190	.315	5.009	4.970	4.927	9-5/16	.010	223-7138
226-4520	6	5.743	.252	5.486	5.412	5.171	9-3/4	.048	
226-4521	4-16	6.500	.526	6.245	6.088	6.117	11.950	.060	223-7146
226-4521X	4-6-8	6.502	.526	6.243	6.145	6.117	11-31/32	.044	
226-4522	6	4.683	.304	4.407	4.340	4.359	8-9/16	.038	223-7150
226-4523	4	3.821	.246	3.700	3.664	3.680	6.940	No	223-7112
226-4525	4-6	4.309	.251	4.092	4.000	4.028	7-1/16	No	223-7137
226-4526	4-6	6.127	.439	5.806	5.750	5.745	11.880	.070	223-7142
226-4527	6	4.559	.254	4.346	4.255	4.278	7.440	.030	223-7137
226-4528	3-4-6	4.841	.238	4.528	4.440	4.236	7.720	.030	223-7163
226-4529	3-4-6	4.8415	.238	4.5293	4.450	4.2365	7720	.030	223-7164
226-4530	6	4.676	.352	4.437	4.393	4.3495	8.540	.038	223-7133
226-4531	6	4.5585	.2515	4.342	4.250	4.280	7.440	.034	223-7169
226-4532	4-6	5.608	.3745	5.4175	5.140	5.188	10.630	.044	223-7107
226-4532X	4	5.6075	.374	5.4175	5.140	5.1885	10.630	.044	
226-4534	8	5.465	.352	5.153	5.120	5.057	8-13/16	.063	223-7172
226-4535	6	8.129	.5035	7.8125	7.735	7.750	16-11/16	.047	223-7173
226-4536	6-8-12	8.744	.378	8.523	8.282	8.249	14.000	No	223-7179
226-4537	6-8	11.608	.621	11.246	11.125	11.123	23.000	No	223-7121
226-4538	3-4	4.683	.302	4.406	4.371	4.360	8.480	.038	223-7150
226-4539	6	7.470	.5265	7.093	7.035	6.978	12.000	.070	223-7183
226-4540	4	4.003	.228				7.312	No	
226-4541	6	4.730	.351	4.537	4.478	4.230	8.440	.050	2237191
226-4542	8-12-16	8.148	.498	7.828	7.680	7.555	14.080	.039	223-7192
226-4542X	8-12-16	8.148	.498	7.828	7.680	7.347	14.080	.039	
226-4543	12-16	11.608	.621	11.247	11.125	11.123	22.630	No	223-7121

## CYLINDER SLEEVES

Part No.	No. Cyl.	Flange		Pilot	Sleeve O.D. At			Fire Wall	O-Ring Kits
		O.D.	Width		Barrel	Seal	Length		
226-4544	12-16	7.4935	.527	7.159	7.100	6.860	12.000	.070	223-7183
226-4545	6-12	10.615	.565	10.300	10.26	10.181	18.620	.046	
226-4546	6	5.746	.590	5.432		5.410	9.440	.048	223-7200
226-4547	6	5.152	.550	4.950	5.000	4.840	9.330	.048	223-7201
226-4548		5.245	.352	4.952	4.927	4.655	9.380	.049	223-7168
226-4552	12							No	
226-4552		10.611	.565	10.301	10.260	9.084	18.620	.046	
226-4553									
226-4556		6.164	.3539	5.865	5.820	5.499	10.950	.0445	223-7207
226-4557		8.330	.498	7.8285	7.690	7.347	14.080	.039	223-7192
226-4557X		8.330	.498	7.8285	7.690	7.347	14.080	.039	
226-4558		6.164	.3538	5.865	5.820	5.499	10.950	.045	223-7207

# CYLINDER REPAIR SLEEVES

For re-sleeving cylinder blocks to standard size. The outside diameter is ground to size with allowance added for press fit.  
Sufficient stock is left on the inside diameter for finishing after installation.

Bore	Length	Wall Thickness	I.D. Semi Finish	O.D. Finish	Part Number	Bore	Length	Wall Thickness	I.D. Semi Finish	O.D. Finish	Part Number
2.91	6-1/2	.0937	2.8830	3.1035	226-8133	3.130	5-3/4	.0937	3.1000	3.3205	226-8129
2.910	6-1/2	.1250	2.8830	3.1660	226-8132	3.130	5-3/4	.1250	3.1000	3.3830	226-8128
3	92.500	.0937	2.9750	3.1910	226-8050	3.150	5-13/16	.0937	3.1200	3.3405	226-8107
3-1/2	5-1/2	.0937	3.4700	3.6905	226-8085	3.150	5-13/16	.1250	3.1200	3.4030	226-8106
3-1/2	5-1/2	.1250	3.4700	3.7530	226-8084	3.228	5-3/8	.0937	3.1980	3.4185	226-8091
3-1/2	5-1/4	.0937	3.4700	3.6905	226-8089	3.228	5-3/8	.1250	3.1980	3.4810	226-8090
3-1/2	5-1/4	.1250	3.4700	3.7530	226-8088	3.2677	70.000	.0937	3.2380	3.4585	226-8074
3-1/2	5-3/4	.0937	3.4700	3.6905	226-8119	3.307	6-1/2	.0937	3.2770	3.4975	226-8127
3-1/2	5-3/4	.1250	3.4700	3.7530	226-8120	3.307	6-1/2	.1250	3.2770	3.5600	226-8112
3-1/2	5-7/8	.0937	3.4700	3.6905	226-8122	3.33	5-11/16	.0937	3.3000	3.5205	226-8086
3-1/2	5-7/8	.1250	3.4700	3.7530	226-8121	3.33	5-11/16	.1250	3.3000	3.5830	226-8087
3-1/2	58.200	.0750	3.5010	3.6500	226-8069	3.425	5-1/2	.0937	3.3950	3.6155	226-8116
3-1/2	92.500	.0937	3.4750	3.6910	226-8057	3.425	5-1/2	.1250	3.3950	3.6780	226-8115
3-1/4	81.350	.0937	3.2250	3.4410	226-8026	3.444	60.000	.0937	3.4140	3.6345	226-8111
3-1/4	92.500	.0937	3.2250	3.4410	226-8053	3.444	60.000	.1250	3.4140	3.6970	226-8110
3-1/4	92.500	.1250	3.2250	3.5030	226-8004	3.516	5-1/2	.0937	3.4880	3.7085	226-8094
3-1/8	81.250	.0937	3.1000	3.3160	226-8036	3.516	5-1/2	.1250	3.4880	3.7710	226-8095
3-1/8	92.500	.0937	3.1000	3.3160	226-8051	3.586	6-1/2	.0937	3.5560	3.7765	226-8109
3-1/8	92.500	.1250	3.1000	3.3780	226-8002	3.586	6-1/2	.1250	3.5560	3.8390	226-8108
3-11/16	102.500	.0937	3.6620	3.8780	226-8060	3.66	5-1/16	.0937	3.6310	3.8515	226-8103
3-13/16	102.500	.0937	3.7870	4.0030	226-8062	3.660	5-1/16	.1250	3.6310	3.9140	226-8102
3-15/16	102.500	.1250	3.9120	4.1910	226-8013	3.78	5-1/2	.0937	3.7500	3.9710	226-8105
3-15/16	6-3/4	.0937	.3907	4.1280	226-8114	3.78	5-1/2	.1250	3.7500	4.0335	226-8104
3-15/16	6-3/4	.1250	.3907	4.1905	226-8113	3.800	5-1/4	.0937	3.7700	3.9905	226-8126
3-3/16	65.000	.0937	3.1620	3.3800	226-8027	3.800	5-1/4	.1250	3.7700	4.0530	226-8125
3-3/16	92.500	.0937	3.1620	3.3780	226-8052	3.800	5-7/8	.0937	3.7700	3.9905	226-8118
3-3/16	92.500	.0937	3.2870	3.5030	226-8054	3.800	5-7/8	.1250	3.7700	4.0530	226-8117
3-3/16	92.500	.1250	.3162	3.4410	226-8003	3.800	60.000	.0937	3.7700	3.9905	226-8078
3-3/4	102.500	.0937	3.7250	3.9410	226-8061	3.800	60.000	.1250	3.7700	4.0530	226-8077
3-3/4	102.500	.1250	3.7250	4.0030	226-8010	4-1/2	120.000	.0937	4.4700	4.6910	226-8068
3-3/4	60.620	.0937	3.7250	3.9410	226-8040	4-1/2	122.500	.1250	4.4700	4.7530	226-8018
3-3/8	92.500	.0937	3.3500	3.5660	226-8055	4-1/4	122.500	.0937	4.2200	4.4410	226-8066
3-31/32	60.000	.0937	3.9350	4.1555	226-8124	4-1/4	122.500	.1250	4.2200	4.5030	226-8016
3-31/32	60.000	.1250			226-8123	4-1/8	102.500	.0937	4.0950	4.3160	226-8065
3-5/16	92.500	.1250	3.2870	3.5660	226-8005	4-1/8	102.500	.1250	4.0950	4.3780	226-8015
3-5/8	102.500	.0937	3.6000	3.8160	226-8059	4-3/16	122.500	.1250	4.1570	4.4410	226-8023
3-7/16	81.250	.0937	3.4120	3.6280	226-8030	4-3/8	122.500	.0937	4.3450	4.5660	226-8067
3-7/16	85.000	.0937	3.4120	3.6280	226-8045	4.000	102.500	.0937	3.9700	4.1910	226-8064
3-7/16	92.500	.0937	3.4120	3.6280	226-8056	4.000	102.500	.1250	3.9700	4.2530	226-8014
3-7/16	92.500	.1250	3.4120	3.6910	226-8006	4.000	55.000	.0937	3.9650	4.1905	226-8075
3-7/8	102.500	.0937	3.8500	4.0660	226-8063	4.000	55.000	.1250	3.9600	4.2530	226-8076
3-7/8	102.500	.1250	3.8500	4.0660	226-8012	4.000	60.620	.0937	3.9700	4.1910	226-8032
3-7/8	58.750	.0937	3.8500	4.0660	226-8033	4.050	62.500	.0937	4.0250	4.2410	226-8071
3-7/8	6-1/4	.0937	3.8450	4.0655	226-8135	4.050	62.500	.1250	4.0250	4.3030	226-8070
3-7/8	6-1/4	.1250	3.8450	4.1280	226-8134	4.200	82.500	.0937	4.1725	4.3615	226-8072
3-7/8	75.000	.0937	3.8500	4.0660	226-8024	4.36	6-1/4	.0937	4.3300	4.5505	226-8097
3-9/16	72.500	.0937	3.5370	3.7530	226-8029	4.36	6-1/4	.1250	4.3300	4.6130	226-8096
3.030	5-3/4	.0937	3.0000	3.2205	226-8131	4.36	60.000	.0937	4.3300	4.5505	226-8099
3.030	5-3/4	.1250	3.0000	3.2830	226-8130	4.36	60.000	.1250	4.3300	4.6130	226-8098

## CYLINDER SLEEVE ASSEMBLY BILL OF MATERIAL

Sleeve Assembly Part Number	Bore	No. Cyl.	Application	Piston	Sleeve	Piston Rings
226-1134	3.375	4	Case/IH	224-2417	226-4134	S4320
226-1139	3	4	Case/IH	224-2423	226-4139	S40700
226-1140	3.875	4	Case/IH	224-2419	226-4140	S4327
226-1176	3.125	4	Case/IH	224-2874	226-4176	S41848
226-1187	3-7/16	4	Ford Tractor	224-2847	226-4187	S427
226-1208	3-3/16	4	Ford Tractor	224-2748	226-4208	S4895
226-1212	3-3/16	4	Ford Tractor	224-2748	226-4212	S4895
226-1220	4-1/4	2-3-4-6	Detroit Diesel	224-2469	226-4220	SC80061
226-1237	3.875	4	Continental			S4764
226-1253	3.187	4	Ford Tractor	224-2742	226-4212	S41816
226-1254	3.9	4	Ford Tractor	224-1020	226-4254	S428
226-1255	3-1/4	4	Case/IH	224-3196	226-4255	S41881
226-1259	3-3/8	4	Allis Chalmers	224-3193	226-4138	S4323
226-1261	3.187	4	Ford Tractor	224-2742	226-4208	S41816
226-1268	3.625	4	Case/IH	224-1048	226-4268	S40070
226-1281	4	4	Case/IH	224-2937	226-4281	S4764
226-1283	3-3/4	6	Waukesha, White Farm	224-3206	226-4513	S40016
226-1286	4	4	Case/IH	224-1386	226-4251	S41019
226-1297	4.125	4	Case/IH	224-1425	226-4251	S41020
226-1298	3-9/16	6	Case/IH	224-1426	226-4118	S41012
226-1299	3-9/16	6	Case/IH	224-1427	226-4118	S41012
226-1312	3-1/4	4	Continental	224-2751	226-4312	S40075
226-1313	3-3/8	4	Continental	224-3194	226-4313	S4323
226-1316	4.75	6	Caterpillar	224-1429	226-4281	S4764
226-1317	3.125	4	Case/IH	224-1430	226-4268	S40070
226-1318	3.125	4	Case/IH	224-1431	226-4402	S40070
226-1319	3.500	6	John Deere	224-1432	226-4267	S41010
226-1334	3.9	4	Ford Tractor	224-1451	226-4254	S40187
226-1336	3-3/8	4	Case/IH, Continental	224-3025	226-4512	S4976
226-1339	4-1/8	4-6	Case/IH	224-1646	226-4124	S40145
226-1340	3-13/16	4	Case/IH	224-1457	226-4126	S40433
226-1342	3.5	4	Case/IH	224-1459	226-4132	S40363
226-1347	4-3/8	4-6	Case/IH	224-1463	226-4142	S40776
226-1360	4	4	Allis Chalmers	224-1475	226-4125	S4330
226-1361	3-9/16	4-6	Allis Chalmers	224-1476	226-4156	S40508
226-1377	3-1/4	4	Case/IH	224-1509	226-4171	S40219
226-1378	3-11/16	6	Case/IH	224-1510	226-4172	S40358
226-1379	3-11/16	4-6	Case/IH	224-1511	226-4172	S40358
226-1388	4	4-6	John Deere	224-1552	226-4184	S40371
226-1401	4-1/8	4	Allis Chalmers, LeRoi	224-1401	226-4514	S40184
226-1402	3-7/16	4	Case/IH	224-1402	226-4402	S41016
226-1404	3-1/8	4	Case/IH	224-1404	226-4404	S4532
226-1414	3.1875	4	Ford Tractor	224-2742	226-4188	S41816.0825
226-1424	3.1875	4	Continental	224-1611	226-4150	S41735
226-1433	3-1/2	4	Ford Tractor	224-1624	226-4507	S40322
226-1467	3.562	6	Allis Chalmers	224-1672	226-4156	S4254
226-1470	4-1/4	6	Allis Chalmers	224-1676	226-4410	S40651
226-1471	4-1/4	4-6	John Deere	224-1680	226-4411	S40649
226-1477	3-7/8	2-3-4-6-8	Detroit Diesel	224-2486	226-4415	S41154
226-1478	3-7/8	2-3-4-6	Detroit Diesel	224-3282	226-4415	S41154
226-1484	3-7/16	4-6	Allis Chalmers	224-1766	226-4417	S4827
226-1493	3.5781	4	Continental	224-1777	226-4424	S40933
226-1499	4-3/4	6	John Deere	224-3210	226-4520	S40920
226-1500	4-1/8	6	Case/IH	224-3014	226-4426	S40610
226-1504	4-7/8	6	Mack	224-1859	226-4432	S41316
226-1506	5-1/8	4-12	Cummins	224-1538	226-4419	S41314

## CYLINDER SLEEVE ASSEMBLY BILL OF MATERIAL

Sleeve Assembly Part Number	Bore	No. Cyl.	Application	Piston	Sleeve	Piston Rings
226-1508	3-3/8	4	Continental	224-1838	226-4523	S4323
226-1509	3-11/16	4-6	Case/IH	224-1511	226-4438	S40358
226-1512	3-11/16	6	Case/IH	224-1510	226-4438	S40358
226-1521	3-7/8	6	Waukesha, Cockshutt-Co-op	224-3219	226-4499	S41128
226-1522	3.86	4-6	John Deere	224-2026	226-4528	S40726
226-1523	3.86	3-4	John Deere	224-2023	226-4463	S40726
226-1524	3.86	3-4	John Deere	224-2023	226-4444	S40726
226-1525	3.86	4-6	John Deere	224-2026	226-4529	S40726
226-1526	3.86	3-4	John Deere	224-3013	226-4529	S40726
226-1527	3.858	3-4	John Deere	224-3013	226-4528	S40726
226-1532	4-7/8	6	Mack	224-1922	226-4229	S40869
226-1537	4.4375	4-6	Cummins	224-3209	226-4519	S40282
226-1538	4-7/16	4-6	Cummins	224-3208	226-4519	S40282
226-1539	5-1/8	4-6	Cummins	224-3220	226-4526	S41314
226-1540	4.02	3-4-6	John Deere	224-2025	226-4446	S41071
226-1543	4.321	6	Case/IH	224-3212	226-4459	S40871
226-1544	4-5/8	6-8	Cummins	224-3216	226-4462	S40856
226-1549	3-7/8	6	Waukesha, Cockshutt-Co-op	224-3221	226-4499	S41128
226-1550	4-1/8	6	Case/IH	224-3017	226-4426	S40282
226-1551	4-5/8	8	Cummins	224-2124	226-4462	S41082
226-1556	4-1/2	6	Case/IH	224-3215	226-4450	S40612
226-1557	4-5/8	8	Cummins	224-3223	226-4501	S41082
226-1571	5-1/2	6	Cummins	224-2091	226-4456	S41885
226-1579	4-5/8	4-6	Case/IH	224-2171	226-4455	S41115
226-1581	4-1/4	6	John Deere	224-2112	226-4416	S41140
226-1583	4.02	3-4-6	John Deere	224-3039	226-4446	S41071
226-1584	4.02	3-4-6	John Deere	224-2024	226-4446	S41071
226-1585	4.3	6	Case/IH, Navistar	224-2028	226-4448	S41893
226-1586	5.4	6-8-12	Caterpillar	224-3275X	226-4521X	S41159
226-1589	4.3	6	Case/IH	224-2027	226-4448	S41893
226-1590	4.3	6	Case/IH	224-2029	226-4448	S41893
226-1591	4-3/8	6	Case/IH	224-2030	226-4449	S41117
226-1593	3-7/8	6	Case/IH	224-3225	226-4530	S41315
226-1594	4-3/8	4-6	Case/IH	224-3224	226-4449	S41057
226-1596	4	4-6	Case/IH	224-1631	226-4452	S41020
226-1604	3-13/16	4	Case/IH	224-1457	226-4454	S40433
226-1606	4.3	6	Case/IH	224-2103	226-4448	S41074
226-1607	5-3/8	6	Case/IH	224-3226	226-4485	S41234
226-1611	3-5/8	4-6	Waukesha, White Farm	224-3218	226-4525	S4535
226-1625	4.321	6	Cummins	224-3232	226-4459	S40871
226-1628	5-1/8	6-12	Cummins	224-3027	226-4419	S41314
226-1629	4-1/4	6	John Deere	224-2140	226-4416	S41140
226-1633	4-1/4	4-6-8-12-16	Detroit Diesel	224-2485	226-4466	S40653
226-1636	3-7/8	6	White Farm	224-3227	226-4531	S41842
226-1637	6-1/4	6-8-12-16	Caterpillar	224-3231X	226-4505X	S40538
226-1639	3-7/8	6	Case/IH	224-3211	226-4522	S41060
226-1643	5-1/2	6	Cummins	224-2143	226-4414	S41888
226-1646	5-1/2	6	Cummins	224-2144	226-4414	S41888
226-1647	4-1/8	4-6	Case/IH	224-2170	226-4475	S41116
226-1648	5-1/4	6	Allis Chalmers	224-3237	226-4199	S40773
226-1649	3-5/8	4	Waukesha	224-3236	226-4525	S41127
226-1656	4	4	Case/IH	224-2160	226-4474	S41161
226-1657	4.56	6	John Deere	224-2168	226-4473	S41319
226-1658	4-5/8	6	Case/IH	224-2171	226-4476	S41115
226-1659	4-5/8	4-6	Case/IH	224-2172	226-4476	S41113
226-1661	4.625	6	Case/IH	224-2174	226-4476	S41115

## CYLINDER SLEEVE ASSEMBLY BILL OF MATERIAL

Sleeve Assembly Part Number	Bore	No. Cyl.	Application	Piston	Sleeve	Piston Rings
226-1663	4-5/8	4-6	Case/IH	224-2176	226-4476	S41318
226-1665	4.19	4	John Deere	224-2191	226-4472	41288
226-1667	3-7/8	4-6	Case/IH	224-3259	226-4538	S41795
226-1668	4.56	6	John Deere	224-2169	226-4473	S41320
226-1669	4.19	4-6	John Deere	224-2186	226-4472	41288
226-1674	3-3/4	6	Case/IH	224-2195	226-4439	S40923
226-1675	3-9/16	6	Case/IH	224-2194	226-4118	S41012
226-1676	4-5/8	8	Cummins	224-3234	226-4501	S41082
226-1682	4-7/8	6	Mack	224-2822	226-4432	S41316
226-1683	4-7/8	6	Mack	224-2201	226-4432	S41418
226-1684	4-7/8	6	Mack	224-2202	226-4432	S41418
226-1685	4-1/2	4-6	Caterpillar	224-3202X	226-4518X	S40574
226-1686	4-3/4	4-6	Caterpillar	224-3217X	226-4493X	S40963
226-1689	4-1/2	4-6	Caterpillar	224 3228X	226-4532X	SC3646
226-1690	6-1/4	6-8-12-16	Caterpillar	224-3022X	226-4505X	S41287
226-1694	5.4	8-12-16	Caterpillar	224-3235X	226-4521X	S41159
226-1695	4-3/4	4-6	Caterpillar	224-3034X	226-4493X	S40963
226-1697	5-3/4	4-6-8-12	Caterpillar	224-3189X	226-4465X	S41822
226-1698	5.4	6	Caterpillar	224-3241X	226-4506X	S41159
226-1699	5.4	8-12	Caterpillar	224-3238X	226-4506X	S41159
226-1700	4-5/8	6	Case/IH	224-2229	226-4476	S41115
226-1703	5-1/2	6	Cummins	224-2197	226-4414	S41889
226-1704	4.56	6	John Deere	224-2236	226-4473	S41319
226-1705	5.4	6	Caterpillar	224-3239X	226-4506X	S41159
226-1706	4.56	6	John Deere	224-2239	226-4473	S41319
226-1707	5.4	6	Caterpillar	224-3240X	226-4506X	S41159
226-1708	4-3/4	6	John Deere	224-2245	226-4480	S41417
226-1709	4.75	6	John Deere	224-2243	226-4480	S41417
226-1711	4-7/16	4-6	Allis Chalmers	224-3242	226-4437	S40430
226-1712	5-1/4	6	Allis Chalmers	224-3018	226-4199	S40773
226-1713	4.19	6	John Deere	224-2246	226-4472	41288
226-1716	5-1/8	6	John Deere	224-2256	226-4481	S41400
226-1717	4	4	Case/IH	224-2255	226-4474	S41161
226-1718	4-7/8	6	Mack	224-2258	226-4432	S41418
226-1719	5-1/8	6	John Deere	224-2256	226-4482	S41400
226-1721	5-3/4	6	Caterpillar	224-3185X	226-4465X	S41329
226-1723	4-1/4	4-6-8-12	Detroit Diesel	224-2260	226-4466	S41407
226-1733	5.4	6-8-12	Caterpillar	224-3245X	226-4506X	S41846
226-1734	5.4	6	Caterpillar	224-3244X	226-4506X	S41846
226-1737	4-7/16	4-6	Allis Chalmers	224-3243	226-4437	S41450
226-1738	4.84	6-8-12-16	Detroit Diesel	224-2272	226-4470	S41410
226-1739	4.84	6-8-12-16	Detroit Diesel	224-2272	226-4467	S41410
226-1741	4-1/2	8	Case, Navistar	224-2031	226-4534	S41122
226-1742	4	4	Case/IH	224-1386	226-4251	S40184
226-1743	5-1/2	12	Cummins	224-2323	226-4414	S41884
226-1745	5-1/2	6	Cummins	224-2344	226-4414	S41889
226-1746	5-1/2	6	Cummins	224-2343	226-4414	S41889
226-1747	5-1/2	6	Cummins	224-2342	226-4414	S41888
226-1748	5-1/2	6	Cummins	224-2341	226-4414	S41889
226-1749	5-1/2	6	Cummins	224-2339	226-4414	S41889
226-1750	5-1/2	6	Cummins	224-2340	226-4414	S41889
226-1751	3-7/8	4-6	Detroit Diesel	224-2337	226-4415	S41449
226-1755	5-1/2	6	Cummins	224-2269	226-4414	S41889
226-1759	5-1/2	6	Cummins	224-2264	226-4414	S41889
226-1760	5-1/2	6	Cummins	224-2262	226-4414	S41889
226-1766	3-7/8	4-6	Allis Chalmers	224-2352	226-4434	S40678

## CYLINDER SLEEVE ASSEMBLY BILL OF MATERIAL

Sleeve Assembly Part Number	Bore	No. Cyl.	Application	Piston	Sleeve	Piston Rings
226-1767	4-1/4	6-8-12-16	Detroit Diesel	224-2360	226-4466	S41408
226-1768	4-1/4	4-6-8-12-16	Detroit Diesel	224-2360	226-4464	S41408
226-1769	5-1/2	6	Cummins	224-2341	226-4414	S41888
226-1770	5-1/2	6	Cummins	224-2262	226-4414	S41888
226-1771	5-1/2	6	Cummins	224-2340	226-4414	S41888
226-1772	5-1/2	6	Cummins	224-2339	226-4414	S41888
226-1773	5-1/2	6	Cummins	224-2344	226-4414	S41888
226-1774	5-1/2	6	Cummins	224-2343	226-4414	S41888
226-1775	5-1/2	6	Cummins	224-2144	226-4414	S41889
226-1776	5-1/2	6	Cummins	224-2143	226-4414	S41889
226-1777	3-7/8	4-6	Allis Chalmers	224-2369	226-4434	S40678
226-1779	4-1/4	4-6	John Deere	224-3257	226-4413	S40938
226-1781	4-1/4	4-6	John Deere	224-3257	226-4416	S40938
226-1783	5-1/8	6	John Deere	224-2257	226-4481	S41400
226-1785	4.300	6	Case/IH	224-2047	226-4448	S41894
226-1786	3-7/8	4-6	Waukesha	224-3250	226-4491	S41840
226-1787	3-7/8	6	Waukesha	224-3229	226-4499	S41840
226-1792	5-1/2	6	Cummins	224-2339	226-4486	S41889
226-1793	5-1/2	6	Cummins	224-2344	226-4486	S41889
226-1794	5-1/2	6	Cummins	224-2340	226-4486	S41889
226-1795	5-1/2	6	Cummins	224-2144	226-4486	S41889
226-1796	5-1/2	6	Cummins	224-2341	226-4486	S41889
226-1798	4-1/4	4-6	Case/IH	224-3204	226-4516	S41793
226-1799	4-1/8	4	Allis Chalmers	224-3195	226-4514	S40184
226-1808	4.3	6	Case/IH, Navistar	224-3296	226-4448	S41894
226-1809	4-3/4	6	Caterpillar	224-3252X	226-4493X	S41394
226-1810	155mm	6	Komatsu	224-3256	226-4492	S41513
226-1812	3-7/8	4-6	Waukesha	224-3254	226-4491	S41128
226-1815	155mm	6	Komatsu	224-3016	226-4492	S41513
226-1816	4-3/4	6	Caterpillar	224-3258X	226-4493X	S40963
226-1817	3.125	4	Case/IH	224-2731	226-4176	S4007
226-1818	3.125	4	Case/IH	224-2731	226-4404	S4007
226-1819	4-1/4	6	John Deere	224-2739	226-4416	S41138
226-1820	4-3/4	4-6	Caterpillar	224-3015X	226-4493X	S41394
226-1821	5-1/2	6	Cummins	224-2743	226-4414	S41889
226-1822	5-1/2	6	Cummins	224-2743	226-4486	S41889
226-1826	4-1/4	6	Allis Chalmers	224-2785	226-4410	S41545
226-1827	4.19	3-4-6	John Deere	224-2791	226-4489	S41679
226-1828	4.19	3-4-6	John Deere	224-2790	226-4489	S41679
226-1830	4	6	Case/IH, Navistar	224-3262	226-4541	S41515
226-1831	5-1/2	6	Cummins	224-2819	226-4414	S41889
226-1832	5-1/2	6	Cummins	224-2819	226-4486	S41889
226-1833	5-1/2	6	Cummins	224-2820	226-4414	S41889
226-1834	5-1/2	6	Cummins	224-2820	226-4486	S41889
226-1835	5-1/2	6	Cummins	224-2821	226-4414	S41889
226-1836	5-1/2	6	Cummins	224-2821	226-4486	S41889
226-1837	5-1/2	6	Cummins	224-2822	226-4414	S41889
226-1838	5-1/2	6	Cummins	224-2822	226-4486	S41889
226-1839	5-1/2	6	Cummins	224-2823	226-4414	S41889
226-1840	5-1/2	6	Cummins	224-2823	226-4486	S41889
226-1841	5-1/2	6	Cummins	224-2818	226-4414	S41889
226-1842	5-1/2	6	Cummins	224-2818	226-4486	S41889
226-1843	5-1/2	6	Cummins	224-2343	226-4486	S41889
226-1844	6-1/4	6-8-12-16	Caterpillar	224-3026X	226-4505X	S40538
226-1845	4-5/8	6	Waukesha	224-3033	226-4517	S41821
226-1846	4-5/8	4-6	Case/IH	224-2176	226-4455	S41318



## CYLINDER SLEEVE ASSEMBLY BILL OF MATERIAL

Sleeve Assembly Part Number	Bore	No. Cyl.	Application	Piston	Sleeve	Piston Rings
226-1847	5-1/2	6	Cummins	224-2341	226-4486	S41888
226-1848	5-1/2	6	Cummins	224-2342	226-4486	S41888
226-1849	5-3/8	6	Case/IH	224-3233	226-4485	S41234
226-1850	4.3	6	Case/IH, Navistar	224-3272	226-4448	S41894
226-1852	4.921	6	Cummins	224-3276	226-4546	S41371
226-1853	3-7/8	6	Oliver	224-3229	226-4527	S41840
226-1854	7-1/2	12	Climax, Waukesha	224-3246	226-4536	41828
226-1855	5.4	6	Caterpillar	224-3023X	226-4506X	S41846
226-1856	5-1/2	6	Cummins	224-2269	226-4486	S41889
226-1857	5-1/2	6	Cummins	224-2197	226-4486	S41889
226-1858	4-1/4	4-6	John Deere	224-3253	226-4416	S40938
226-1859	5-3/8	6	Waukesha	224-3205	226-4503	S51823
226-1860	5-1/2	6	Cummins	224-2344	226-4486	S41888
226-1861	4-3/4	4-6	Caterpillar	224-3271X	226-4493X	S41841
226-1862	5-1/2	6	Cummins	224-2262	226-4486	S41888
226-1863	5-1/2	6	Cummins	224-3269	226-4414	S41888
226-1864	4.3	6	Navistar	224-3296	226-4448	S41781
226-1865	5-1/2	6	Cummins	224-2143	226-4486	S41888
226-1866	5-1/2	6	Cummins	224-2143	226-4486	S41889
226-1867	6-1/4	6	Waukesha	224-3201	226-4498	41820
226-1868	4-5/8	6	Waukesha	224-3033	226-4517	S41821
226-1869	5-1/2	6	Cummins	224-2144	226-4486	S41888
226-1870	5-1/2	6	Cummins	224-2264	226-4486	S41889
226-1873	5-1/2	6	Cummins	224-2262	226-4486	S41889
226-1874	5-1/2	6	Cummins	224-2343	226-4486	S41888
226-1875	6-1/4	6-8-12-16	Caterpillar	224-3230X	226-4505X	S40538
226-1876	7	6	Waukesha	224-3222	226-4535	S41896
226-1877	4-5/8	4-6	Case/IH	224-2172	226-4455	S41113
226-1878	7-1/2	6-8	Climax, Waukesha	224-3247	226-4536	41828
226-1879	4-3/4	4-6	Caterpillar	224-3248X	226-4493X	S40963
226-1880	5-1/2	6	Cummins	224-3249	226-4414	S41889
226-1881	4-1/4	4-6-8-12-16	Detroit Diesel	224-2260	226-4464	S41407
226-1882	4-3/4	4-6	Caterpillar	224-3251X	226-4493X	S41394
226-1883	5-1/2	6	Cummins	224-2340	226-4486	S41888
226-1884	5-1/2	6	Cummins	224-2339	226-4486	S41888
226-1888	5-1/2	6	Cummins	224-3249	226-4486	S41889
226-1889	4-3/4	4-6	Caterpillar	224-3297X	226-4493X	S41653
226-1890	4-3/4	4-6	Caterpillar	224-3263X	226-4493X	S41394
226-1891	4.3	6	Navistar	224-3264	226-4448	S41839
226-1892	6.7	8-12-16	Caterpillar	224-3265X	226-4542X	41832
226-1894	4.49	6	Cummins	224-3012	226-4496	S41677
226-1895	4-3/4	4-6	Caterpillar	224-3270X	226-4493X	S41841
226-1896	5-3/8	6	Waukesha	224-3203	226-4503	S51823
226-1897	3-7/8	6	Waukesha	224-3229	226-4499	S41840
226-1898	5.4	6-8-12	Caterpillar	224-3268X	226-4506X	S41846
226-1899	4.165	6	Cummins	224-3012	226-4547	S41677
226-1900	3-3/16	4	Ford	224-2748	226-4511	S41815
226-1901	5.4	6-8-12	Caterpillar	224-3028X	226-4506X	S41846
226-1902	4.562	6	John Deere	224-3277	226-4473	S41784
226-1903	5.5	6	Cummins	224-3284X	226-4414	S41887
226-1904	5.5	6	Cummins	224-3288X	226-4414	S41886
226-1905	5.5	6	Cummins	224-3289X	226-4414	S41887
226-1906	5.5	6	Cummins	224-3298	226-4486	S41886
226-1907	5.5	6	Cummins	224-3289	226-4486	S41887
226-1908	5.5	6	Cummins	224-3284	226-4486	S41877
226-1909	5.5	6	Cummins	224-3295	226-4414	S41887

## CYLINDER SLEEVE ASSEMBLY BILL OF MATERIAL

Sleeve Assembly Part Number	Bore	No. Cyl.	Application	Piston	Sleeve	Piston Rings
226-1910	5.5	6	Cummins	224-3295	226-4486	S41887
226-1911	5.5	6	Cummins	224-3290	226-4414	S41887
226-1912	5.5	6	Cummins	224-3290	226-4486	S41887
226-1913	5.5	6	Cummins	224-3294	226-4414	S41887
226-1914	5.5	6	Cummins	224-3294	226-4486	S41887
226-1915	4.921	6	Cummins	224-3292	226-4546	S41371
226-1916	4.49	6	Cummins	224-3293	226-4496	S41677
226-1917	4.49	6	Cummins	224-3293	226-4547	S41677
226-1918	5.4	6	Caterpillar	224-3291X	226-4506X	S41846
226-1919	4.3	6	Navistar	224-3296	226-4448	S41781
226-1921	5.4	6	Caterpillar	224-3301	226-4506	S41846
226-1922	5.4	6	Caterpillar	224-3298	226-4506	S41846
226-1923	5.5	6	Cummins		226-4414	S41889
226-1924	5.5	6	Cummins	224-2339	226-4414	S41889
226-1925	5.5	6	Cummins	224-2340	226-4414	S41889
226-1929	4.3	6	Navistar	224-3296	226-4548A	S41781
226-1931	5.4	6	Caterpillar	224-3299	226-4506	S41846
226-1932	6.7	8-12-16	Caterpillar	224-3265X	226-4557	S41832
226-1937	5.118	4-6	Detroit Diesel	224-3305		S41891
226-1940	5.118	4-6	Detroit Diesel	224-3305		S41892
226-1942	4.25	4-12	Detroit Diesel	224-2360	226-4464	S41899
226-1943	4.25	6-16	Detroit Diesel	224-2260	226-4464	S41899
226-1944	4.3	6	Navistar	224-3315	226-4448	S41839
226-1945	4.25	6-16	Detroit Diesel	224-2360	226-4466	S41900
226-1946	4.25	6-16	Detroit Diesel	224-2260	226-4466	S41900

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-1130	P	H	.296	.311	.444	.467	69°	288°	298°
229-1171	ST	H	.229	.235	.401	.411	44°	272°	280°
229-1187	ST	H	.249	.249	.374	.374	49°	280°	278°
229-1198	ST	M	.269	.269	.404	.404	44°	262°	256°
229-1210	ST	M	.264	.262	.378	.375	20°	254°	244°
229-1218	ST	H	.257	.257	.427	.427	40°	260°	260°
229-1251	ST	M	.210	.225	.311	.333	10°	242°	216°
229-1252	ST	H	.271	.271	.400	.400	26°	270°	270°
229-1273	ST	H	.222	.222	.333	.333	38°	263°	262°
229-1274	ST	H	.260	.273	.390	.410	34°	260°	271°
229-1293	ST	M	.274	.281	.405	.415	24°	293°	338°
229-1301	ST	M	.220	.371	.333	.557	21°	266°	294°
229-1323	ST	H	.222	.222	.328	.328	34°	260°	260°
229-1327	ST	H	.289	.287	.434	.431	38°	284°	293°
229-1338	ST	M	.210	.225	.310	.332	9°	240°	249°
229-1364	ST	H	.240	.240	.384	.384	62°	266°	266°
229-1371	ST	M	.265	.265	.440	.440	27°	244°	264°
229-1380	ST	M	.270	.276	.406	.414	26°	271°	260°
229-1394	ST	H	.222	.222	.389	.389	33°	270°	270°
229-1402	ST	H	.238	.238	.381	.381	37°	261°	261°
229-1415	ST	H	.262	.236	.445	.401	39°	260°	252°
229-1442	ST	H	.240	.240	.360	.360	44°	269°	272°
229-1443	ST	H	.232	.232	.401	.401	44°	271°	271°
229-1480	ST	M	.303	.309	.455	.464	63°	244°	270°
229-1483	ST	M	.278	.278	.444	.444	37°	254°	254°
229-1551	ST	H	.232	.232	.406	.406	71°	276°	276°
229-1601	ST	H	.230	.230	.368	.381	44°	292°	265°
229-1604	ST	H	.259	.282	.427	.465	51°	284°	300°
229-1606	ST	H	.269	.269	.430	.430	74°	284°	284°
229-1608	ST	M	.260	.260	.372	.372	34°	216°	216°
229-1609	ST	M	.273	.273	.388	.388	26°	251°	251°
229-1612	CP	M	.323	.323	.485	.485	66°	294°	294°
229-1614	CP	M	.306	.306	.520	.520	75°	310°	297°
229-1615	SP	H	.302	.302	.453	.453	76°	304°	304°
229-1616	SP	M	.298	.298	.477	.477	82°	273°	273°
229-1617	P	H	.286	.286	.458	.458	71°	297°	297°
229-1621	ST	H	.245	.245	.424	.424	48°	277°	277°
229-1622	CP	M	.329	.341	.494	.512	89°	304°	320°
229-1623	CP	M	.330	.330	.528	.528	85°	299°	300°
229-1624	P	H	.293	.293	.507	.507	91°	315°	315°
229-1626	ST	H	.270	.272	.405	.408	55°	271°	280°
229-1629	P	H	.296	.297	.444	.445	64°	310°	313°
229-1633	ST	H	.247	.249	.427	.431	36°	273°	281°
229-1634	ST	H	.253	.253	.438	.438	35°	271°	271°
229-1636	P	H	.294	.297	.500	.505	81°	310°	325°
229-1637	ST	H	.234	.234	.398	.398	57°	270°	270°
229-1640	ST	H	.232	.232	.348	.348	27°	240°	240°
229-1643	ST	H	.253	.253	.405	.405	34°	262°	262°
229-1644	CP	H	.297	.297	.475	.475	94°	314°	314°
229-1645	ST	H	.248	.267	.373	.400	26°	264°	275°
229-1646	ST	H	.244	.285	.388	.453	74°	282°	328°
229-1647	ST	H	.247	.250	.427	.433	44°	273°	290°
229-1648	ST	H	.250	.251	.400	.402	36°	277°	291°
229-1649	ST	H	.253	.278	.443	.487	36°	273°	287°
229-1650	ST	H	.253	.243	.392	.377	63°	270°	293°
229-1651	ST	H	.266	.266	.426	.426	43°	263°	263°

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-1130	214°	224°	1° ATC	35° ABC	48° BBC	4° BTC	Hyd.	Hyd.	108°	116°
229-1171	190°	198°	14° ATC	24° ABC	36° BBC	18° BTC	Hyd.	Hyd.	110°	116°
229-1187	190°	190°	18° ATC	28° ABC	24° BBC	14° BTC	Hyd.	Hyd.	113°	109°
229-1198	198°	198°	5° ATC	23° ABC	37° BBC	19° BTC	.013H	.013H	103°	119°
229-1210	197°	196°	12° ATC	29° ABC	34° BBC	18° BTC	.018H	.018H	110°	116°
229-1218	190°	190°	13° ATC	23° ABC	27° BBC	17° BTC	Hyd.	Hyd.	108°	112°
229-1251	168°	170°	24° ATC	12° ABC	13° BBC	23° BTC	.006H	.018H	108°	108°
229-1252	185°	185°	16° ATC	21° ABC	22° BBC	17° BTC	Hyd.	Hyd.	108°	110°
229-1273	172°	172°	22° ATC	14° ABC	12° BBC	20° BTC	Hyd.	Hyd.	108°	106°
229-1274	194°	203°	11° ATC	25° ABC	37° BBC	14° BTC	Hyd.	Hyd.	108°	116°
229-1293	189°	193°	12° ATC	21° ABC	30° BBC	17° BTC	.006H	.018H	106°	114°
229-1301	198°	206°	12° ATC	30° ABC	30° BBC	4° BTC	.018H	.012H	109°	111°
229-1323	172°	172°	18° ATC	10° ABC	12° BBC	20° BTC	Hyd.	Hyd.	104°	106°
229-1327	206°	209°	7° ATC	33° ABC	40° BBC	11° BTC	Hyd.	Hyd.	110°	116°
229-1338	168°	170°	24° ATC	12° ABC	13° BBC	23° BTC	.006H	.016H	108°	108°
229-1364	186°	186°	13° ATC	19° ABC	25° BBC	19° BTC	Hyd.	Hyd.	106°	112°
229-1371	182°	198°	12° ATC	14° ABC	29° BBC	11° BTC	.025H	.025H	103°	110°
229-1380	198°	203°	8° ATC	26° ABC	33° BBC	10° BTC	.010H	.020H	106°	112°
229-1394	172°	172°	20° ATC	12° ABC	11° BBC	19° ATC	Hyd.	Hyd.	106°	104°
229-1402	187°	187°	10° ATC	17° ABC	26° BBC	19° BTC	Hyd.	Hyd.	103°	113°
229-1415	188°	178°	17° ATC	25° ABC	19° BBC	21° BTC	Hyd.	Hyd.	111°	110°
229-1442	193°	194°	10° ATC	23° ABC	27° BBC	13° BTC	Hyd.	Hyd.	106°	110°
229-1443	186°	186°	19° ATC	25° ABC	27° BBC	21° BTC	Hyd.	Hyd.	108°	113°
229-1480	202°	216°	0° TDC	22° ABC	47° BBC	11° BTC	.012H	.018H	101°	119°
229-1483	204°	204°	6° ATC	30° ABC	33° BBC	9° BTC	.020H	.020H	108°	111°
229-1551	188°	188°	19° ATC	27° ABC	24° BBC	16° BTC	Hyd.	Hyd.	113°	110°
229-1601	184°	189°	22° ATC	26° ABC	17° BBC	8° BTC	Hyd.	Hyd.	114°	104°
229-1604	194°	210°	17° ATC	31° ABC	38° BBC	8° BTC	Hyd.	Hyd.	114°	113°
229-1606	207°	207°	9° ATC	36° ABC	39° BBC	12° BTC	Hyd.	Hyd.	112°	116°
229-1608	194°	194°	14° ATC	28° ABC	34° BBC	20° ATC	.025H	.025H	111°	117°
229-1609	202°	202°	6° ATC	28° ABC	38° BBC	16° BTC	.019H	.019H	107°	117°
229-1612	254°	254°	16° BTC	58° ABC	64° BBC	10° ATC	.030H	.030H	110°	118°
229-1614	242°	242°	12° BTC	50° ABC	60° BBC	2° ATC	.020H	.024H	108°	120°
229-1615	230°	230°	3° BTC	47° ABC	51° BBC	1° BTC	Hyd.	Hyd.	112°	116°
229-1616	228°	228°	5° BTC	42° ABC	53° BBC	6° BTC	.018H	.018H	108°	120°
229-1617	218°	218°	3° BTC	35° ABC	49° BBC	11° BTC	Hyd.	Hyd.	106°	120°
229-1621	192°	192°	10° ATC	22° ABC	30° BBC	18° ATC	Hyd.	Hyd.	106°	114°
229-1622	257°	270°	19° BTC	58° ABC	70° BBC	20° ATC	.022H	.024H	108°	116°
229-1623	251°	252°	23° BTC	48° ABC	58° BBC	14° ATC	.020H	.020H	102°	112°
229-1624	224°	224°	3° BTC	41° ABC	47° BBC	3° BTC	Hyd.	Hyd.	109°	115°
229-1626	198°	208°	7° ATC	25° ABC	40° BBC	12° BTC	Hyd.	Hyd.	106°	116°
229-1629	218°	218°	2° ATC	36° ABC	46° BBC	8° BTC	Hyd.	Hyd.	107°	117°
229-1633	192°	199°	17° ATC	29° ABC	31° BBC	12° BTC	Hyd.	Hyd.	113°	111°
229-1634	200°	200°	8° ATC	28° ABC	33° BBC	13° BTC	Hyd.	Hyd.	108°	113°
229-1636	222°	235°	0° TDC	42° ABC	57° BBC	2° BTC	Hyd.	Hyd.	110°	120°
229-1637	196°	196°	14° ATC	30° ABC	33° BBC	17° BTC	Hyd.	Hyd.	110°	117°
229-1640	178°	178°	22° ATC	20° ABC	11° BBC	13° BTC	Hyd.	Hyd.	111°	102°
229-1643	190°	190°	19° ATC	29° ABC	29° BBC	19° BTC	Hyd.	Hyd.	113°	115°
229-1644	244°	244°	12° BTC	52° ABC	52° BBC	12° BTC	Hyd.	Hyd.	110°	110°
229-1645	181°	192°	20° ATC	21° ABC	24° BBC	12° BTC	Hyd.	Hyd.	110°	108°
229-1646	194°	225°	20° ATC	34° ABC	50° BBC	5° BTC	Hyd.	Hyd.	116°	118°
229-1647	192°	198°	13° ATC	25° ABC	29° BBC	11° BTC	Hyd.	Hyd.	109°	111°
229-1648	187°	200°	13° ATC	20° ABC	34° BBC	14° BTC	Hyd.	Hyd.	106°	112°
229-1649	193°	206°	14° ATC	27° ABC	39° BBC	13° BTC	Hyd.	Hyd.	110°	116°
229-1650	189°	208°	15° ATC	24° ABC	40° BBC	12° BTC	Hyd.	Hyd.	109°	116°
229-1651	196°	196°	11° ATC	27° ABC	31° BBC	15° BTC	Hyd.	Hyd.	109°	112°

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-1652	ST	M	.251	.251	.402	.402	42°	351°	351°
229-1653	SP	H	.300	.317	.450	.476	102°	320°	330°
229-1654	ST	H	.286	.296	.429	.444	44°	279°	290°
229-1655	ST	H	.260	.260	.416	.416	41°	270°	270°
229-1657	ST	H	.251	.244	.402	.390	67°	272°	283°
229-1658	P	H	.311	.325	.538	.562	80°	302°	308°
229-1660	ST	H	.267	.275	.459	.473	76°	286°	282°
229-1661	ST	H	.259	.259	.440	.440	118°	285°	297°
229-1663	ST	H	.273	.273	.410	.410	33°	278°	278°
229-1664	ST	H	.240	.240	.360	.360	44°	269°	272°
229-1665	ST	H	.245	.245	.368	.368	35°	254°	254°
229-1666	ST	H	.239	.260	.357	.390	56°	244°	259°
229-1668	ST	H	.249	.273	.374	.410	58°	250°	269°
229-1675	ST	M	.256	.256	.374	.374	34°	258°	247°
229-1676	ST	M	.437	.438	.437	.438	83°	239°	286°
229-1677	ST	M	.420	.430	.420	.430	70°	232°	282°
229-1678	ST	H	.251	.240	.402	.384	72°	272°	280°
229-1679	ST	H	.244	.244	.422	.422	46°	268°	268°
229-1686	ST	H	.238	.247	.381	.395	35°	257°	269°
229-1687	ST	H	.234	.234	.398	.398	62°	269°	269°
229-1688	ST	H	.243	.243	.365	.365	59°	264°	264°
229-1690	ST	M	.224	.236	N/A	N/A	N/A	N/A	N/A
229-1691	ST	M	.289	.289	N/A	N/A	74°	292°	292°
229-1692	ST	M	.276	.276	N/A	N/A	N/A	N/A	N/A
229-1693	ST	M	.222	.232	N/A	N/A	N/A	N/A	N/A
229-1696	ST	H	.233	.233	.350	.350	38°	256°	256°
229-1697	ST	H	.232	.232	.406	.406	69°	276°	276°
229-1699	ST	M	.263	.266	N/A	N/A	N/A	N/A	N/A
229-1700	ST	M	.316	.319	N/A	N/A	N/A	N/A	N/A
229-1701	ST	H	.244	.240	.358	.384	59°	251°	280°
229-1702	ST	H	.251	.240	.402	.384	62°	272°	280°
229-1703	ST	H	.234	.257	.351	.386	54°	244°	259°
229-1704	ST	H	.247	.250	.395	.400	28°	256°	277°
229-1707	ST	H	.272	.272	.435	.435	39°	274°	274°
229-1708	ST	H	.232	.232	.406	.406	71°	276°	276°
229-1709	ST	M	.231	.231	.340	.341	50°	268°	288°
229-1710	ST	H	.241	.241	.386	.386	60°	N/A	N/A
229-1712	ST	H	.252	.252	.378	.378	18°	255°	255°
229-1713	P	H	.298	.298	.447	.447	62°	290°	290°
229-1714	ST	M	.220	.215	N/A	N/A	N/A	N/A	N/A
229-1715	ST	M	.230	.230	N/A	N/A	N/A	N/A	N/A
229-1716	ST	M	.406	.406	N/A	N/A	N/A	298°	310°
229-1720	ST	H	.231	.263	.347	.395	58°	238°	256°
229-1724	ST	R	.251	.279	.402	.446	35°	235°	269°
229-1725	ST	M	.269	.271	N/A	N/A	N/A	N/A	N/A
229-1726	ST	M	.270	.270	N/A	N/A	N/A	271°	298°
229-1730	MPG	H	.281	.296	.422	.444	59°	278°	288°
229-1731	MPG	H	.265	.281	.424	.450	48°	272°	280°
229-1732	MPG	H	.281	.296	.486	.512	64°	282°	292°
229-1733	MPG	H	.281	.296	.486	.512	64°	282°	292°
229-1734	MPG	H	.281	.296	.450	.474	61°	280°	289°
229-1735	MPG	H	.281	.296	.422	.444	59°	278°	288°
229-1736	MPG	H	.265	.281	.398	.422	50°	270°	278°
229-1737	P	H	.296	.311	.503	.529	72°	292°	302°
229-1744	ST	H	.240	.241	.415	.417	30°	266°	275°
229-1745	ST	H	.229	.229	.380	.380	35°	271°	271°

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-1652	206°	206°	14° ATC	40° ABC	30° BBC	4° BTC	.008C	.010C	108°	100°
229-1653	232°	242°	9° BTC	43° ABC	58° BBC	4° ATC	Hyd.	Hyd.	107°	117°
229-1654	210°	220°	7° ATC	37° ABC	46° BBC	6° BTC	Hyd.	Hyd.	112°	116°
229-1655	195°	195°	6° ATC	21° ABC	29° BBC	14° BTC	Hyd.	Hyd.	103°	112°
229-1657	194°	199°	15° ATC	29° ABC	31° BBC	12° BTC	Hyd.	Hyd.	112°	112°
229-1658	224°	234°	5° BTC	39° ABC	54° BBC	0° TDC	Hyd.	Hyd.	107°	117°
229-1660	119°	203°	17° ATC	36° ABC	35° BBC	12° BTC	Hyd.	Hyd.	117°	113°
229-1661	210°	213°	5° ATC	35° ABC	43° BBC	10° BTC	Hyd.	Hyd.	109°	117°
229-1663	203°	203°	7° ATC	30° ABC	32° BBC	9° BTC	Hyd.	Hyd.	108°	111°
229-1664	193°	194°	10° ATC	23° ABC	27° BBC	13° BTC	Hyd.	Hyd.	106°	110°
229-1665	184°	185°	20° ATC	24° ABC	16° BBC	11° BTC	Hyd.	Hyd.	112°	103°
229-1666	178°	194°	17° ATC	15° ABC	28° BBC	14° BTC	Hyd.	Hyd.	106°	112°
229-1668	189°	202°	9° ATC	18° ABC	37° BBC	15° BTC	Hyd.	Hyd.	102°	116°
229-1675	202°	202°	7° ATC	29° ABC	35° BBC	13° BTC	.014H	.016H	108°	114°
229-1676	216°	218°	0° TDC	36° ABC	37° BBC	1° ATC	.015H	.016H	108°	108°
229-1677	208°	214°	4° ATC	32° ABC	39° BBC	5° BTC	.015H	.016H	108°	112°
229-1678	194°	194°	15° ATC	29° ABC	28° BBC	14° BTC	Hyd.	Hyd.	112°	110°
229-1679	197°	196°	22° ATC	39° ABC	39° BBC	22° BTC	Hyd.	Hyd.	110°	112°
229-1686	183°	192°	13° ATC	16° ABC	27° BBC	15° BTC	Hyd.	Hyd.	104°	111°
229-1687	193°	193°	3° ATC	16° ABC	24° BBC	11° BTC	Hyd.	Hyd.	100°	107°
229-1688	189°	189°	11° ATC	20° ABC	24° BBC	15° BTC	Hyd.	Hyd.	105°	110°
229-1690	180°	184°	N/A	N/A	N/A	N/A	.008H	.012H	N/A	N/A
229-1691	219°	219°	N/A	N/A	N/A	N/A	.010H	.012H	N/A	N/A
229-1692	181°	200°	N/A	N/A	N/A	N/A	.010H	.012H	N/A	N/A
229-1693	171°	175°	N/A	N/A	N/A	N/A	.014H	.014H	N/A	N/A
229-1696	181°	181°	18° ATC	19° ABC	14° BBC	13° BTC	Hyd.	Hyd.	108°	104°
229-1697	190°	190°	18° ATC	28° ABC	25° BBC	15° BTC	Hyd.	Hyd.	113°	110°
229-1699	199°	202°	N/A	N/A	N/A	N/A	.008H	.012H	N/A	N/A
229-1700	192°	196°	N/A	N/A	N/A	N/A	.007H	.013H	N/A	N/A
229-1701	181°	194°	14° ATC	15° ABC	28° BBC	14° BTC	Hyd.	Hyd.	104°	110°
229-1702	194°	194°	15° ATC	29° ABC	28° BBC	14° BTC	Hyd.	Hyd.	112°	110°
229-1703	176°	194°	20° ATC	16° ABC	28° BBC	14° BTC	Hyd.	Hyd.	108°	112°
229-1704	180°	197°	16° ATC	16° ABC	25° BBC	18° BTC	Hyd.	Hyd.	106°	112°
229-1707	194°	194°	21° ATC	35° ABC	24° BBC	10° BTC	Hyd.	Hyd.	118°	107°
229-1708	190°	190°	18° ATC	28° ABC	25° BBC	15° BTC	Hyd.	Hyd.	113°	110°
229-1709	202°	206°	6° ATC	28° ABC	38° BBC	12° BTC	.010H	.017H	107°	115°
229-1710	185°	186°	28° BTC	76° ABC	72° BBC	32° BTC	Hyd.	Hyd.	112°	114°
229-1712	187°	187°	15° ATC	22° ABC	15° BBC	8° BTC	Hyd.	Hyd.	108°	102°
229-1713	223°	223°	1° BTC	42° ABC	49° BBC	6° BTC	Hyd.	Hyd.	110°	118°
229-1714	168°	175°	N/A	N/A	N/A	N/A	.006H	.006H	N/A	N/A
229-1715	182°	181°	N/A	N/A	N/A	N/A	.006C	.010C	N/A	N/A
229-1716	224°	224°	2° BTC	42° ABC	41° BBC	3° ATC	.010H	.012H	N/A	N/A
229-1720	179°	196°	16° ATC	15° ABC	27° BBC	11° BTC	Hyd.	Hyd.	105°	109°
229-1724	164°	192°	14° ATC	2° BBC	30° BBC	18° BTC	Hyd.	Hyd.	96°	114°
229-1725	192°	192°	N/A	N/A	N/A	N/A	.006H	.008H	N/A	N/A
229-1726	218°	222°	N/A	N/A	N/A	N/A	Mech.	Mech.	N/A	N/A
229-1730	204°	214°	5° ATC	29° ABC	44° BBC	10° BTC	Hyd.	Hyd.	107°	117°
229-1731	194°	204°	12° ATC	26° ABC	41° BBC	17° BTC	Hyd.	Hyd.	109°	119°
229-1732	204°	214°	5° ATC	29° ABC	44° BBC	10° BTC	Hyd.	Hyd.	107°	117°
229-1733	204°	214°	4° ATC	28° ABC	45° BBC	11° BTC	Hyd.	Hyd.	106°	118°
229-1734	204°	214°	6° ATC	30° ABC	43° BBC	9° BTC	Hyd.	Hyd.	108°	116°
229-1735	204°	214°	6° ATC	30° ABC	43° BBC	9° BTC	Hyd.	Hyd.	108°	116°
229-1736	194°	204°	10° ATC	24° ABC	39° BBC	15° BTC	Hyd.	Hyd.	107°	117°
229-1737	214°	224°	1° ATC	35° ABC	48° BBC	4° BTC	Hyd.	Hyd.	108°	116°
229-1744	185°	201°	14° ATC	19° ABC	34° BBC	13° BTC	Hyd.	Hyd.	106°	114°
229-1745	193°	193°	11° ATC	24° ABC	32° BBC	19° BTC	Hyd.	Hyd.	106°	117°

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-1747	ST	M	.283	.286	N/A	N/A	N/A	N/A	N/A
229-1748	ST	M	.277	.276	N/A	N/A	N/A	N/A	N/A
229-1755	ST	H	.243	.243	.430	.430	22°	274°	271°
229-1756	ST	M	.270	.271	.405	.406	59°	271°	298°
229-1757	ST	M	.256	.258	N/A	N/A	N/A	N/A	N/A
229-1758	ST	M	.256	.258	N/A	N/A	N/A	N/A	N/A
229-1764	ST	M	.289	.289	N/A	N/A	N/A	285°	285°
229-1766	ST	M	.284	.284	.426	.426	82°	282°	282°
229-1772	ST	M	.264	.264	.385	.385	54°	258°	258°
229-1773	ST	R	.238	.247	.381	.395	35°	259°	271°
229-1774	ST	R	.278	.278	.445	.445	49°	297°	279°
229-1775	MPG	H	.281	.296	.450	.474	61°	280°	290°
229-1776	MPG	H	.281	.296	.486	.512	64°	282°	292°
229-1777	MPG	H	.280	.295	.448	.472	47°	280°	290°
229-1778	MPG	H	.281	.296	.422	.444	59°	278°	288°
229-1784	MPG	H	.281	.296	.422	.444	59°	278°	288°
229-1785	ST	H	.250	.240	.403	.386	39°	289°	283°
229-1786	MPG	H	.281	.296	.450	.474	65°	280°	289°
229-1787	MPG	H	.281	.296	.422	.444	60°	278°	288°
229-1793	ST	H	.240	.241	.415	.417	30°	266°	275°
229-1794	ST	H	.263	.263	.395	.395	37°	256°	256°
229-1795	ST	H	.216	.207	.335	.321	61°	246°	268°
229-1797	ST	H	.263	.263	.395	.395	37°	256°	256°
229-1798	ST	H	.247	.251	.395	.402	36°	249°	256°
229-1821	ST	H	.240	.248	.384	.397	66°	279°	274°
229-1822	MPG	H	.280	.295	.490	.516	51°	282°	292°
229-1824	ST	H	.263	.273	.395	.410	70°	256°	269°
229-1827	ST	H	.229	.229	.380	.380	35°	271°	271°
229-1828	ST	H	.251	.240	.402	.384	62°	272°	280°
229-1829	ST	H	.234	.257	.351	.386	54°	244°	259°
229-1832	MR	H	.269	.276	.404	.414	45°	269°	271°
229-1833	MR	H	.278	.283	.445	.453	46°	284°	304°
229-1834	MR	H	.278	.283	.445	.453	46°	284°	304°
229-1835	ST	H	.275	.275	.440	.440	48°	273°	291°
229-1836	ST	H	.240	.240	.400	.400	34°	269°	269°
229-1837	ST	H	.243	.243	.430	.430	22°	274°	271°
229-1839	ST	H	.238	.238	.412	.412	28°	249°	251°
229-1840	ST	H	.247	.247	.396	.396	35°	271°	271°
229-1841	ST	H	.251	.265	.400	.420	77°	281°	278°
229-1849	ST	H	.281	.281	.422	.422	65°	237°	273°
229-1871	ST	H	.269	.276	.404	.414	63°	269°	271°
229-1872	ST	H	.254	.253	N/A	N/A	38°	N/A	N/A
229-1873	ST	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-1875	ST	H	.232	.232	.406	.406	69°	276°	276°
229-1876	MPG	H	.265	.280	.464	.490	45°	272°	282°
229-1877	ST	H	.243	.243	.430	.430	20°	265°	265°
229-1878	MPG	H	.265	.281	.464	.491	57°	273°	282°
229-1879	MR	H	.267	.273	.401	.410	58°	269°	284°
229-1880	MR	H	.267	.267	.401	.410	58°	269°	284°
229-1881	MR	H	.269	.273	.404	.410	55°	270°	284°
229-1882	MR	H	.269	.273	.404	.410	55°	270°	284°
229-1883	ST	H	.278	.283	.481	.490	46°	287°	307°
229-1884	P	H	.296	.311	.512	.538	72°	292°	302°
229-1886	ST	H	.241	.241	N/A	N/A	N/A	N/A	N/A
229-1887	ST	M	.293	.293	N/A	N/A	N/A	N/A	N/A
229-1888	ST	M	.280	.280	N/A	N/A	N/A	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-1747	203°	204°	N/A	N/A	N/A	N/A	.006H	.010H	N/A	N/A
229-1748	215°	213°	N/A	N/A	N/A	N/A	.012H	.012H	N/A	N/A
229-1755	202°	202°	1°BTC	21°ABC	37°BBC	15°BTC	Hyd.	Hyd.	110°	106°
229-1756	218°	222°	N/A	N/A	N/A	N/A	.006H	.008H	N/A	N/A
229-1757	208°	214°	N/A	N/A	N/A	N/A	.006H	.008H	N/A	N/A
229-1758	208°	214°	N/A	N/A	N/A	N/A	.006H	.008H	N/A	N/A
229-1764	220°	220°	N/A	N/A	N/A	N/A	.010H	.012H	N/A	N/A
229-1766	222°	222°	2°BTC	20°ABC	44°BBC	2°BTC	.012H	.012H	109°	113°
229-1772	207°	207°	5°ATC	32°ABC	35°BBC	8°BTC	.014H	.016H	108°	112°
229-1773	183°	192°	13°ATC	16°ABC	27°BBC	15°BTC	Hyd.	Hyd.	104°	111°
229-1774	210°	210°	11°ATC	41°ABC	40°BBC	10°BTC	Hyd.	Hyd.	116°	115°
229-1775	204°	214°	5°ATC	29°ABC	44°BBC	10°BTC	Hyd.	Hyd.	107°	117°
229-1776	204°	214°	5°ATC	29°ABC	44°BBC	10°BTC	Hyd.	Hyd.	107°	117°
229-1777	204°	214°	4°ATC	28°ABC	49°BBC	15°BTC	Hyd.	Hyd.	106°	122°
229-1778	204°	214°	6°ATC	30°ABC	43°BBC	9°BTC	Hyd.	Hyd.	108°	116°
229-1784	204°	214°	5°ATC	29°ABC	44°BBC	10°BTC	Hyd.	Hyd.	107°	117°
229-1785	202°	190°	16°ATC	38°ABC	23°BBC	13°BTC	Hyd.	Hyd.	117°	110°
229-1786	204°	214°	3°ATC	27°ABC	42°BBC	8°BTC	Hyd.	Hyd.	105°	115°
229-1787	204°	214°	5°ATC	29°ABC	44°BBC	10°BTC	Hyd.	Hyd.	107°	117°
229-1793	185°	201°	14°ATC	19°ABC	34°BBC	13°BTC	Hyd.	Hyd.	106°	114°
229-1794	196°	196°	10°ATC	26°ABC	29°BBC	13°BTC	Hyd.	Hyd.	108°	111°
229-1795	173°	182°	19°ATC	12°ABC	16°BBC	14°BTC	Hyd.	Hyd.	105°	106°
229-1797	196°	196°	10°ATC	26°ABC	29°BBC	13°BTC	Hyd.	Hyd.	108°	111°
229-1798	178°	187°	13°ATC	11°ABC	29°BBC	22°BTC	Hyd.	Hyd.	102°	116°
229-1821	195°	199°	9°ATC	24°ABC	35°BBC	16°BTC	Hyd.	Hyd.	107°	115°
229-1822	204°	214°	5°ATC	29°ABC	44°BBC	10°BTC	Hyd.	Hyd.	107°	117°
229-1824	196°	202°	11°ATC	27°ABC	30°BBC	8°BTC	Hyd.	Hyd.	109°	109°
229-1827	193°	193°	11°BTC	24°ABC	32°BBC	19°BTC	Hyd.	Hyd.	106°	117°
229-1828	194°	194°	15°ATC	29°ABC	28°BBC	14°BTC	Hyd.	Hyd.	112°	110°
229-1829	176°	194°	20°ATC	16°ABC	28°BBC	14°BTC	Hyd.	Hyd.	108°	112°
229-1832	202°	207°	9°ATC	31°ABC	37°BBC	10°BTC	Hyd.	Hyd.	110°	112°
229-1833	206°	221°	13°ATC	39°ABC	48°BBC	7°BTC	Hyd.	Hyd.	116°	114°
229-1834	206°	221°	13°ATC	39°ABC	48°BBC	7°BTC	Hyd.	Hyd.	116°	114°
229-1835	196°	208°	14°ATC	30°ABC	32°BBC	4°BTC	Hyd.	Hyd.	112°	106°
229-1836	200°	200°	8°ATC	28°ABC	34°BBC	14°BTC	Hyd.	Hyd.	108°	114°
229-1837	202°	202°	1°BTC	21°ABC	37°BBC	15°BTC	Hyd.	Hyd.	110°	106°
229-1839	187°	189°	23°ATC	30°ABC	39°BBC	30°BTC	Hyd.	Hyd.	108°	116°
229-1840	192°	192°	12°ATC	24°ABC	29°BBC	17°BTC	Hyd.	Hyd.	108°	113°
229-1841	193°	197°	8°ATC	21°ABC	29°BBC	12°BTC	Hyd.	Hyd.	104°	114°
229-1849	178°	202°	13°ATC	11°ABC	39°BBC	17°BTC	Hyd.	Hyd.	101°	120°
229-1871	202°	207°	14°ATC	36°ABC	37°BBC	10°BTC	Hyd.	Hyd.	115°	114°
229-1872	176°	184°	15°ATC	11°ABC	17°BBC	13°BTC	Hyd.	Hyd.	103°	105°
229-1873	N/A	N/A	N/A	N/A	N/A	N/A	Mech.	Mech.	N/A	N/A
229-1875	190°	190°	18°ATC	28°ABC	25°BBC	15°BTC	Hyd.	Hyd.	113°	110°
229-1876	194°	204°	8°ATC	22°ABC	37°BBC	13°BTC	Hyd.	Hyd.	105°	115°
229-1877	198°	198°	1°ATC	19°ABC	39°BBC	21°BTC	Hyd.	Hyd.	110°	110°
229-1878	194°	204°	8°ATC	22°ABC	37°BBC	13°BTC	Hyd.	Hyd.	105°	115°
229-1879	202°	213°	7°ATC	29°ABC	37°BBC	4°BTC	Hyd.	Hyd.	108°	112°
229-1880	202°	213°	7°ATC	29°ABC	37°BBC	4°BTC	Hyd.	Hyd.	108°	112°
229-1881	202°	213°	7°ATC	29°ABC	41°BBC	8°BTC	Hyd.	Hyd.	108°	116°
229-1882	202°	213°	7°ATC	29°ABC	41°BBC	8°BTC	Hyd.	Hyd.	108°	116°
229-1883	206°	221°	17°ATC	43°ABC	44°BBC	3°BTC	Hyd.	Hyd.	120°	110°
229-1884	214°	224°	1°ATC	33°ABC	50°BBC	6°BTC	Hyd.	Hyd.	106°	118°
229-1886	178°	176°	89°BTC	91°BBC	92°BBC	88°ATC	Hyd.	Hyd.	N/A	N/A
229-1887	227°	227°	N/A	N/A	N/A	N/A	.006H	.010H	N/A	N/A
229-1888	227°	227°	N/A	N/A	N/A	N/A	.012H	.012H	N/A	N/A



## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-1889	ST	H	N/A	.220	N/A	N/A	N/A	N/A	N/A
229-1890	ST	H	.220	N/A	N/A	N/A	N/A	N/A	N/A
229-1891	ST	M	.197	.197	N/A	N/A	N/A	N/A	N/A
229-1892	ST	M	.213	.213	N/A	N/A	N/A	N/A	N/A
229-1894	ST	M	.269	.269	N/A	N/A	N/A	N/A	N/A
229-1895	ST	M	.258	.258	N/A	N/A	N/A	N/A	N/A
229-1896	ST	M	.232	.223	N/A	N/A	N/A	N/A	N/A
229-1898	MR	H	.271	.282	.477	.496	64°	289°	302°
229-1899	MR	H	.271	.282	.477	.496	64°	289°	302°
229-1900	MR	H	.286	.296	.429	.444	44°	279°	290°
229-1901	MR	H	.286	.296	.429	.444	44°	279°	290°
229-1902	ST	H	.234	.257	.351	.386	39°	252°	262°
229-1903	ST	H	.234	.243	.430	.430	20°	266°	266°
229-1904	ST	H	.232	.232	.406	.406	69°	276°	276°
229-1905	ST	H	.265	.265	.424	.424	46°	270°	270°
229-1907	ST	H	.265	.265	.440	.440	32°	275°	275°
229-1908	ST	H	.240	.240	.398	.398	20°	256°	256°
229-1909	ST	H	.229	.229	.380	.380	35°	271°	271°
229-1910	ST	H	.265	.265	.440	.440	32°	275°	275°
229-1911	ST	H	.240	.240	.398	.398	20°	256°	256°
229-1915	MPG	H	.243	.243	.430	.430	20°	258°	274°
229-1916	ST	H	.276	.287	.414	.431	40°	273°	278°
229-1917	ST	H	.234	.257	.351	.386	41°	252°	262°
229-1918	ST	H	.263	.263	.423	.423	46°	298°	298°
229-1919	ST	H	.229	.239	.366	.382	43°	262°	265°
229-1922	ST	H	.245	.245	.434	.434	8°	267°	263°
229-1924	MR	H	.253	.253	.443	.443	57°	281°	281°
229-1925	ST	H	.240	.241	.415	.417	32°	266°	275°
229-1926	ST	H	.260	.260	.419	.419	44°	288°	288°
229-1927	ST	H	.240	.240	.398	.398	20°	256°	256°
229-1928	ST	M	.216	.216	N/A	N/A	N/A	N/A	N/A
229-1929	ST	H	.265	.265	.397	.397	46°	N/A	N/A
229-1933	ST	H	.224	.240	.358	.384	59°	251°	280°
229-1934	ST	H	.293	.293	N/A	N/A	N/A	N/A	N/A
229-1935	ST	H	.260	.260	.390	.390	39°	N/A	N/A
229-1936	ST	H	.252	.252	.393	.393	37°	N/A	N/A
229-1937	ST	H	.210	.240	.335	.383	51°	254°	283°
229-1938	ST	H	.276	.276	N/A	N/A	N/A	N/A	N/A
229-1939	ST	H	.276	.276	N/A	N/A	N/A	N/A	N/A
229-1940	ST	H	.245	.245	.433	.433	30°	N/A	N/A
229-1941	ST	H	N/A	N/A	.350	N/A	N/A	N/A	N/A
229-1942	ST	H	N/A	N/A	N/A	.350	N/A	N/A	N/A
229-1943	ST	M	.250	.250	N/A	N/A	N/A	N/A	N/A
229-1944	ST	M	.226	.226	N/A	N/A	N/A	N/A	N/A
229-1945	ST	H	.401	.401	N/A	N/A	N/A	250°	250°
229-1946	ST	H	.235	.250	N/A	N/A	N/A	N/A	N/A
229-1947	ST	M	.281	.283	N/A	N/A	N/A	N/A	N/A
229-1948	ST	H	.278	.279	N/A	N/A	N/A	N/A	N/A
229-1949	ST	H	.252	.251	N/A	N/A	N/A	N/A	N/A
229-1952	ST	H	.246	.254	.359	.371	45°	276°	292°
229-1953	MR	H	.271	.282	.461	.480	64°	289°	302°
229-1957	MR	H	.300	.300	.510	.510	61°	293°	293°
229-1958	MR	H	.300	.300	.510	.510	61°	293°	293°
229-1959	MR	H	.230	.230	.403	.403	53°	288°	288°
229-1962	ST	H	.246	.246	.394	.394	N/A	N/A	N/A
229-1963	ST	H	.246	.246	.394	.394	N/A	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-1889	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1890	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1891	191°	191°	N/A	N/A	N/A	N/A	.008H	.012H	N/A	N/A
229-1892	204°	204°	N/A	N/A	N/A	N/A	.008H	.012H	N/A	N/A
229-1894	226°	226°	N/A	N/A	N/A	N/A	.012H	.012H	N/A	N/A
229-1895	N/A	N/A	N/A	N/A	N/A	N/A	.006C	.011C	N/A	N/A
229-1896	206°	205°	N/A	N/A	N/A	N/A	.011H	.011H	N/A	N/A
229-1898	214°	218°	4°ATC	38°ABC	49°BBC	11°BTC	Hyd.	Hyd.	110°	120°
229-1899	214°	218°	4°ATC	38°ABC	49°BBC	11°BTC	Hyd.	Hyd.	110°	120°
229-1900	210°	220°	13°ATC	43°ABC	40°BBC	0°TDC	Hyd.	Hyd.	118°	110°
229-1901	210°	210°	13°ATC	43°ABC	40°BBC	0°TDC	Hyd.	Hyd.	118°	110°
229-1902	179°	195°	19°ATC	18°ABC	29°BBC	14°BTC	Hyd.	Hyd.	108°	112°
229-1903	213°	213°	5°BTC	28°ABC	45°BBC	12°BTC	Hyd.	Hyd.	110°	110°
229-1904	190°	190°	18°ATC	28°ABC	25°BBC	15°BTC	Hyd.	Hyd.	113°	110°
229-1905	197°	197°	13°ATC	30°ABC	31°BBC	14°BTC	Hyd.	Hyd.	111°	113°
229-1907	209°	209°	7°ATC	36°ABC	45°BBC	16°BTC	Hyd.	Hyd.	111°	121°
229-1908	191°	191°	14°ATC	25°ABC	30°BBC	19°BTC	Hyd.	Hyd.	108°	116°
229-1909	193°	193°	11°ATC	24°ABC	32°BBC	19°BTC	Hyd.	Hyd.	106°	117°
229-1910	209°	209°	7°ATC	36°ABC	45°BBC	16°BTC	Hyd.	Hyd.	111°	121°
229-1911	191°	191°	19°ATC	30°ABC	25°BBC	14°BTC	Hyd.	Hyd.	113°	111°
229-1915	206°	220°	2°BTC	24°ABC	49°BBC	9°BTC	Hyd.	Hyd.	110°	110°
229-1916	207°	214°	13°ATC	40°ABC	44°BBC	10°BTC	Hyd.	Hyd.	116°	118°
229-1917	179°	195°	17°ATC	16°ABC	29°BBC	14°BTC	Hyd.	Hyd.	106°	112°
229-1918	203°	203°	9°ATC	32°ABC	35°BBC	12°BTC	Hyd.	Hyd.	110°	114°
229-1919	186°	191°	12°ATC	18°ABC	30°BBC	19°BTC	Hyd.	Hyd.	104°	115°
229-1922	194°	191°	24°ATC	38°ABC	21°BBC	10°BTC	Hyd.	Hyd.	118°	108°
229-1924	204°	204°	8°ATC	32°ABC	36°BBC	12°BTC	Hyd.	Hyd.	109°	115°
229-1925	185°	201°	14°ATC	19°ABC	34°BBC	13°BTC	Hyd.	Hyd.	106°	114°
229-1926	199°	199°	11°ATC	30°ABC	37°BBC	18°BTC	Hyd.	Hyd.	110°	118°
229-1927	191°	191°	19°ATC	30°ABC	25°BBC	19°BTC	Hyd.	Hyd.	113°	111°
229-1928	211°	211°	N/A	N/A	N/A	N/A	.010H	.012H	N/A	N/A
229-1929	197°	197°	12°ATC	29°ABC	32°BBC	15°BTC	Hyd.	Hyd.	N/A	N/A
229-1933	181°	194°	14°ATC	15°ABC	28°BBC	14°BTC	Hyd.	Hyd.	N/A	N/A
229-1934	230°	230°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1935	194°	194°	12°ATC	26°ABC	27°BBC	13°BTC	Hyd.	Hyd.	N/A	N/A
229-1936	214°	214°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1937	179°	196°	14°ATC	13°ABC	29°BBC	13°BTC	Hyd.	Hyd.	103°	110°
229-1938	220°	220°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1939	220°	220°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1940	194°	190°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1941	200°	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1942	N/A	200°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1943	206°	210°	N/A	N/A	N/A	N/A	.008C	.010C	N/A	N/A
229-1944	208°	210°	N/A	N/A	N/A	N/A	.008C	.010C	N/A	N/A
229-1945	216°	216°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1946	202°	214°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1947	222°	223°	N/A	N/A	N/A	N/A	.006H	.006H	N/A	N/A
229-1948	220°	219°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1949	200°	199°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1952	196°	200°	5°ATC	21°ABC	36°BBC	16°BTC	Hyd.	Hyd.	103°	117°
229-1953	214°	218°	4°ATC	38°ABC	49°BBC	11°BTC	Hyd.	Hyd.	110°	120°
229-1957	224°	224°	3°ATC	47°ABC	48°BBC	4°BTC	Hyd.	Hyd.	114°	117°
229-1958	224°	224°	3°ATC	47°ABC	48°BBC	4°BTC	Hyd.	Hyd.	114°	117°
229-1959	192°	192°	17°ATC	29°ABC	26°BBC	14°BTC	Hyd.	Hyd.	113°	110°
229-1962	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-1963	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-1964	MPG	H	.281	.296	.450	.474	65°	280°	289°
229-1965	P	H	.305	.319	.491	.514	65°	294°	304°
229-1966	ST	M	.222	.225	N/A	N/A	N/A	N/A	N/A
229-1967	ST	M	.266	.262	N/A	N/A	N/A	N/A	N/A
229-1968	ST	M	.266	.248	N/A	N/A	N/A	N/A	N/A
229-1969	ST	M	.229	.230	N/A	N/A	N/A	N/A	N/A
229-1972	P	H	.305	.305	.488	.488	73°	294°	294°
229-1980	ST	H	.281	.296	.422	.444	56°	278°	289°
229-1987	P	H	.296	.296	.444	.444	68°	287°	287°
229-1988	P	H	.296	.311	.444	.467	69°	288°	298°
229-1989	P	H	.303	.303	.455	.455	71°	292°	292°
229-1990	P	H	.300	.307	.450	.461	59°	291°	287°
229-1991	P	H	.310	.310	.465	.465	66°	298°	298°
229-1993	SP	H	.320	.320	.480	.480	72°	288°	288°
229-1994	SP	H	.325	.325	.488	.488	80°	300°	308°
229-1995	SP	H	.325	.339	.488	.509	84°	303°	313°
229-1996	CP	H	.339	.339	.509	.509	84°	302°	302°
229-1998	P	M	.304	.319	.456	.479	36°	258°	270°
229-2004	MPG	H	.281	.296	.478	.503	64°	282°	292°
229-2006	P	H	.296	.296	.503	.503	65°	293°	293°
229-2007	P	H	.303	.303	.516	.516	74°	294°	294°
229-2011	SP	H	.320	.320	.544	.544	72°	290°	290°
229-2020	P	H	.281	.296	.450	.474	61°	280°	290°
229-2021	MPG	H	.280	.280	.420	.420	58°	280°	280°
229-2023	P	H	.296	.311	.444	.467	69°	288°	298°
229-2032	P	H	.296	.311	.444	.467	69°	288°	298°
229-2034	P	H	.310	.325	.465	.488	71°	298°	308°
229-2036	CP	H	.317	.317	.476	.476	106°	330°	330°
229-2046	P	H	.270	.270	.454	.454	46°	282°	282°
229-2047	SP	H	.285	.285	.479	.479	56°	292°	292°
229-2048	SP	H	.300	.300	.504	.504	64°	300°	300°
229-2055	MPG	H	.258	.273	.413	.437	45°	258°	271°
229-2056	P	H	.280	.280	.448	.448	60°	282°	282°
229-2057	P	H	.296	.311	.474	.498	69°	288°	300°
229-2058	P	H	.305	.305	.488	.488	64°	294°	294°
229-2069	MPG	H	.265	.281	.458	.486	57°	273°	282°
229-2072	P	H	.292	.292	.505	.505	82°	310°	310°
229-2076	MPG	H	.265	.281	.424	.449	56°	272°	280°
229-2077	P	H	.296	.311	.473	.497	70°	289°	300°
229-2086	P	H	.296	.296	.512	.512	72°	292°	292°
229-2088	P	H	.305	.305	.528	.528	64°	296°	296°
229-2094	P	H	.280	.280	.484	.484	62°	284°	284°
229-2098	SP	H	.325	.340	.569	.595	81°	312°	322°
229-2100	MPG	H	.281	.299	.450	.474	61°	280°	289°
229-2101	P	H	.296	.311	.474	.498	70°	289°	300°
229-2104	SP	H	.296	.296	.474	.474	103°	329°	329°
229-2108	SP	H	.320	.320	.480	.480	67°	287°	287°
229-2116	ST	H	.211	.213	N/A	N/A	N/A	N/A	N/A
229-2118	ST	H	.265	.265	.440	.440	32°	275°	275°
229-2119	ST	H	.240	.240	.400	.400	34°	269°	269°
229-2120	CP	H	.289	.289	.434	.434	96°	312°	312°
229-2121	ST	H	.240	.240	.400	.400	36°	269°	269°
229-2122	ST	H	.292	.292	N/A	N/A	N/A	N/A	N/A
229-2124	ST	H	.243	.243	.430	.430	22°	274°	271°
229-2125	ST	H	.278	.279	N/A	N/A	N/A	N/A	N/A
229-2126	ST	M	.281	.283	N/A	N/A	N/A	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-1964	204°	214°	4°ATC	28°ABC	41°BBC	7°BTC	Hyd.	Hyd.	106°	114°
229-1965	218°	228°	2°BTC	36°ABC	51°BBC	3°BTC	Hyd.	Hyd.	107°	117°
229-1966	200°	219°	N/A	N/A	N/A	N/A	.006H	.011H	N/A	N/A
229-1967	218°	225°	N/A	N/A	N/A	N/A	.006H	.011H	N/A	N/A
229-1968	218°	225°	N/A	N/A	N/A	N/A	.006C	.011C	N/A	N/A
229-1969	217°	219°	N/A	N/A	N/A	N/A	Mech.	Mech.	N/A	N/A
229-1972	218°	218°	4°BTC	34°ABC	44°BBC	6°BTC	Hyd.	Hyd.	105°	115°
229-1980	204°	214°	9°ATC	33°ABC	44°BBC	10°BTC	Hyd.	Hyd.	111°	117°
229-1987	214°	214°	2°BTC	32°ABC	42°BBC	8°BTC	Hyd.	Hyd.	105°	115°
229-1988	214°	224°	0°TDC	34°ABC	49°BBC	5°BTC	Hyd.	Hyd.	107°	117°
229-1989	218°	218°	4°BTC	34°ABC	44°BBC	6°BTC	Hyd.	Hyd.	105°	115°
229-1990	224°	224°	3°ATC	47°ABC	46°BBC	2°BTC	Hyd.	Hyd.	114°	114°
229-1991	224°	224°	5°BTC	39°ABC	49°BBC	5°BTC	Hyd.	Hyd.	107°	117°
229-1993	232°	232°	10°BTC	42°ABC	46°BBC	6°ATC	Hyd.	Hyd.	106°	110°
229-1994	232°	234°	10°BTC	42°ABC	47°BBC	7°ATC	Hyd.	Hyd.	106°	110°
229-1995	234°	244°	10°BTC	44°ABC	59°BBC	5°ATC	Hyd.	Hyd.	107°	117°
229-1996	246°	246°	17°BTC	49°ABC	55°BBC	11°ATC	Hyd.	Hyd.	106°	112°
229-1998	219°	229°	1°ATC	40°ABC	53°BBC	4°BTC	.022H	.022H	110°	118°
229-2004	204°	214°	6°ATC	30°ABC	43°BBC	9°BTC	Hyd.	Hyd.	108°	116°
229-2006	214°	214°	2°ATC	36°ABC	46°BBC	12°BTC	Hyd.	Hyd.	109°	119°
229-2007	218°	218°	4°BTC	34°ABC	44°BBC	6°BTC	Hyd.	Hyd.	105°	115°
229-2011	231°	231°	8°BTC	43°ABC	46°BBC	5°ATC	Hyd.	Hyd.	107°	111°
229-2020	204°	214°	10°ATC	34°ABC	39°BBC	5°BTC	Hyd.	Hyd.	112°	112°
229-2021	208°	208°	3°ATC	31°ABC	39°BBC	11°BTC	Hyd.	Hyd.	107°	115°
229-2023	214°	224°	1°BTC	35°ABC	48°BBC	4°ATC	Hyd.	Hyd.	108°	116°
229-2032	214°	224°	0°TDC	34°ABC	49°BBC	5°ATC	Hyd.	Hyd.	107°	117°
229-2034	224°	234°	5°BTC	39°ABC	54°BBC	0°TDC	Hyd.	Hyd.	107°	117°
229-2036	242°	242°	15°BTC	47°ABC	59°BBC	3°ATC	Hyd.	Hyd.	106°	118°
229-2046	220°	220°	1°BTC	39°ABC	45°BBC	5°BTC	Hyd.	Hyd.	108°	116°
229-2047	230°	230°	6°BTC	44°ABC	50°BBC	0°TDC	Hyd.	Hyd.	108°	116°
229-2048	240°	240°	11°BTC	49°ABC	55°BBC	5°ATC	Hyd.	Hyd.	108°	116°
229-2055	190°	202°	12°ATC	22°ABC	35°BBC	13°BTC	Hyd.	Hyd.	106°	114°
229-2056	208°	208°	3°ATC	31°ABC	39°BBC	11°BTC	Hyd.	Hyd.	107°	115°
229-2057	214°	224°	1°ATC	35°ABC	48°BBC	4°BTC	Hyd.	Hyd.	108°	116°
229-2058	218°	218°	4°BTC	34°ABC	44°BBC	6°BTC	Hyd.	Hyd.	105°	115°
229-2069	194°	204°	8°ATC	22°ABC	37°BBC	13°BTC	Hyd.	Hyd.	105°	115°
229-2072	219°	219°	1°BTC	38°ABC	49°BBC	10°BTC	Hyd.	Hyd.	108°	120°
229-2076	194°	204°	8°ATC	22°ABC	37°BBC	13°BTC	Hyd.	Hyd.	105°	115°
229-2077	214°	224°	0°TDC	34°ABC	49°BBC	5°BTC	Hyd.	Hyd.	107°	117°
229-2086	214°	214°	2°BTC	32°ABC	42°BBC	8°BTC	Hyd.	Hyd.	105°	115°
229-2088	218°	218°	4°BTC	34°ABC	44°BBC	6°BTC	Hyd.	Hyd.	105°	115°
229-2094	208°	208°	1°ATC	29°ABC	41°BBC	13°BTC	Hyd.	Hyd.	105°	117°
229-2098	234°	244°	10°BTC	44°ABC	59°BBC	5°ATC	Hyd.	Hyd.	107°	117°
229-2100	204°	214°	4°ATC	28°ABC	45°BBC	11°BTC	Hyd.	Hyd.	106°	118°
229-2101	214°	224°	1°ATC	33°ABC	50°BBC	6°BTC	Hyd.	Hyd.	106°	118°
229-2104	232°	232°	9°BTC	43°ABC	55°BBC	3°BTC	Hyd.	Hyd.	107°	119°
229-2108	231°	231°	9°BTC	42°ABC	49°BBC	2°ATC	Hyd.	Hyd.	106°	114°
229-2116	164°	166°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2118	209°	209°	7°ATC	36°ABC	45°BBC	16°BTC	Hyd.	Hyd.	111°	121°
229-2119	200°	200°	8°ATC	28°ABC	34°BBC	14°BTC	Hyd.	Hyd.	108°	114°
229-2120	244°	244°	15°BTC	48°ABC	51°BBC	12°ATC	Hyd.	Hyd.	107°	109°
229-2121	200°	200°	8°ATC	28°ABC	34°BBC	14°BTC	Hyd.	Hyd.	108°	114°
229-2122	230°	230°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2124	202°	202°	1°BTC	21°ABC	37°BBC	15°BTC	Hyd.	Hyd.	110°	106°
229-2125	220°	219°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2126	222°	223°	N/A	N/A	N/A	N/A	.006H	.010H	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-2128	ST	H	.243	.243	.430	.430	20°	266°	266°
229-2129	ST	H	.245	.245	.434	.434	34°	262°	262°
229-2132	MR	H	.273	.273	.410	.410	51°	269°	283°
229-2133	MR	H	.273	.273	.410	.410	51°	269°	283°
229-2134	P	H	.291	.291	.437	.437	84°	300°	300°
229-2135	P	H	.291	.291	.509	.509	92°	308°	308°
229-2136	MPG	H	.258	.273	.439	.464	47°	261°	272°
229-2137	MPG	H	.280	.280	.484	.484	62°	284°	284°
229-2138	P	H	.291	.291	.466	.466	84°	304°	304°
229-2141	MPG	H	.280	.280	.420	.420	58°	280°	280°
229-2142	ST	H	.224	.249	N/A	N/A	N/A	N/A	N/A
229-2143	ST	H	.260	.260	.396	.396	20°	270°	270°
229-2146	ST	M	.225	.225	N/A	N/A	N/A	N/A	N/A
229-2147	ST	H	.260	.260	N/A	N/A	N/A	N/A	N/A
229-2148	ST	H	.260	.260	N/A	N/A	N/A	N/A	N/A
229-2151	ST	M	.240	.240	N/A	N/A	N/A	N/A	N/A
229-2152	ST	M	.278	.282	N/A	N/A	N/A	N/A	N/A
229-2153	ST	H	.260	.260	.390	.390	N/A	270°	270°
229-2155	ST	H	.260	.278	.416	.445	41°	274°	288°
229-2156	MPG	H	.265	.281	.398	.422	50°	270°	278°
229-2157	MPG	H	.280	.280	.420	.420	58°	280°	280°
229-2158	ST	M	.251	.257	N/A	N/A	N/A	N/A	N/A
229-2159	ST	M	.243	.242	N/A	N/A	N/A	N/A	N/A
229-2166	ST	M	.219	.219	N/A	N/A	N/A	N/A	N/A
229-2169	ST	H	.272	.274	.435	.438	54°	264°	280°
229-2172	ST	H	.237	.237	N/A	N/A	N/A	N/A	N/A
229-2173	ST	H	.248	.266	.372	.399	N/A	264°	275°
229-2174	MPG	H	.280	.280	.420	.420	56°	280°	280°
229-2176	ST	H	.244	.244	N/A	N/A	N/A	N/A	N/A
229-2192	ST	H	.245	.259	.424	.448	38°	270°	286°
229-2193	ST	H	.257	.264	.445	.457	37°	278°	282°
229-2194	ST	H	.216	.216	.355	.355	N/A	N/A	N/A
229-2195	ST	H	.239	.239	.397	.397	N/A	N/A	N/A
229-2196	ST	H	.265	.265	.439	.439	N/A	N/A	N/A
229-2199	MPG	H	.245	.265	.368	.398	58°	260°	270°
229-2200	MPG	H	.265	.281	.398	.423	66°	270°	278°
229-2201	MPG	H	.281	.296	.422	.444	63°	278°	288°
229-2202	MPG	H	.272	.272	.408	.408	60°	280°	280°
229-2203	MPG	H	.290	.303	.435	.455	61°	283°	286°
229-2205	P	H	.295	.310	.443	.465	61°	288°	298°
229-2206	ST	H	.221	.241	N/A	N/A	N/A	N/A	N/A
229-2211	ST	R	.272	.272	.436	.436	N/A	282°	282°
229-2216	P	H	.311	.311	.498	.498	65°	285°	285°
229-2217	ST	H	.260	.260	.455	.455	34°	273°	273°
229-2218	ST	H	N/A	.410	N/A	.410	N/A	N/A	N/A
229-2219	ST	H	.410	N/A	.410	N/A	N/A	N/A	N/A
229-2221	MR	H	.323	.328	.549	.557	88°	293°	310°
229-2222	MR	H	.329	.340	.559	.578	89°	314°	314°
229-2223	MR	M	.363	.374	.617	.636	90°	296°	302°
229-2224	MPG	H	.258	.273	.387	.410	40°	258°	269°
229-2225	P	H	.286	.286	.429	.429	75°	295°	295°
229-2226	ST	H	.293	.293	N/A	N/A	24°	N/A	N/A
229-2227	ST	M	.293	.293	N/A	N/A	N/A	N/A	N/A
229-2228	MR	H	.312	.324	.530	.551	42°	316°	314°
229-2229	ST	M	.211	.230	N/A	N/A	N/A	N/A	N/A
229-2231	ST	H	.210	.230	N/A	N/A	N/A	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-2128	213°	213°	5°BTC	28°ABC	45°BBC	12°BTC	Hyd.	Hyd.	110°	110°
229-2129	188°	188°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	118°	108°
229-2132	202°	213°	10°ATC	32°ABC	40°BBC	7°BTC	Hyd.	Hyd.	111°	115°
229-2133	202°	213°	10°ATC	32°ABC	40°BBC	7°BTC	Hyd.	Hyd.	111°	115°
229-2134	224°	224°	9°BTC	35°ABC	45°BBC	1°BTC	Hyd.	Hyd.	103°	113°
229-2135	224°	224°	1°ATC	45°ABC	35°BBC	9°ATC	Hyd.	Hyd.	113°	103°
229-2136	190°	202°	12°ATC	22°ABC	35°BBC	13°BTC	Hyd.	Hyd.	106°	114°
229-2137	208°	208°	3°ATC	31°ABC	39°BBC	11°BTC	Hyd.	Hyd.	107°	115°
229-2138	224°	224°	4°BTC	38°ABC	46°BBC	2°BTC	Hyd.	Hyd.	106°	114°
229-2141	208°	208°	2°ATC	30°ABC	40°BBC	12°BTC	Hyd.	Hyd.	106°	116°
229-2142	204°	214°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2143	191°	191°	15°BTC	26°ABC	25°BBC	14°BTC	Hyd.	Hyd.	N/A	N/A
229-2146	204°	203°	N/A	N/A	N/A	N/A	.006C	.010C	N/A	N/A
229-2147	194°	194°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2148	194°	194°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2151	197°	197°	N/A	N/A	N/A	N/A	.010H	.012H	N/A	N/A
229-2152	N/A	N/A	N/A	N/A	N/A	N/A	.006H	.010H	N/A	N/A
229-2153	191°	191°	20°ATC	31°ABC	30°BBC	19°BTC	Hyd.	Hyd.	N/A	N/A
229-2155	198°	208°	15°ATC	33°ABC	37°BBC	9°BTC	Hyd.	Hyd.	115°	114°
229-2156	194°	204°	10°ATC	24°ABC	39°BBC	15°BTC	Hyd.	Hyd.	107°	117°
229-2157	208°	208°	4°ATC	32°ABC	38°BBC	10°BTC	Hyd.	Hyd.	108°	114°
229-2158	189°	193°	N/A	N/A	N/A	N/A	.008H	.014H	N/A	N/A
229-2159	215°	220°	N/A	N/A	N/A	N/A	.012H	.012H	N/A	N/A
229-2166	206°	206°	N/A	N/A	N/A	N/A	.012H	.012H	N/A	N/A
229-2169	194°	210°	15°ATC	29°ABC	31°BBC	1°BTC	Hyd.	Hyd.	112°	106°
229-2172	205°	205°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2173	181°	192°	20°ATC	21°ABC	24°BBC	12°BTC	Hyd.	Hyd.	N/A	N/A
229-2174	208°	208°	6°ATC	34°ABC	38°BBC	10°BTC	Hyd.	Hyd.	110°	114°
229-2176	193°	193°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2192	184°	201°	14°ATC	18°ABC	35°BBC	14°BTC	Hyd.	Hyd.	106°	114°
229-2193	193°	198°	12°ATC	25°ABC	38°BBC	20°BTC	Hyd.	Hyd.	108°	119°
229-2194	189°	186°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2195	192°	192°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2196	210°	210°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2199	184°	194°	12°ATC	16°ABC	21°BBC	7°BTC	Hyd.	Hyd.	104°	104°
229-2200	194°	204°	7°ATC	21°ABC	26°BBC	2°BTC	Hyd.	Hyd.	104°	104°
229-2201	204°	214°	8°ATC	32°ABC	37°BBC	3°BTC	Hyd.	Hyd.	110°	110°
229-2202	208°	208°	3°ATC	31°ABC	37°BBC	9°BTC	Hyd.	Hyd.	107°	113°
229-2203	209°	216°	3°ATC	32°ABC	45°BBC	9°BTC	Hyd.	Hyd.	107°	117°
229-2205	214°	224°	7°BTC	27°ABC	56°BBC	12°BTC	Hyd.	Hyd.	100°	124°
229-2206	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2211	193°	193°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2216	219°	219°	0°TDC	39°BDC	40°BBC	1°BTC	Hyd.	Hyd.	110°	110°
229-2217	195°	195°	12°ATC	27°ABC	30°BBC	15°BTC	Hyd.	Hyd.	109°	113°
229-2218	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2219	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2221	232°	239°	12°BTC	40°ABC	56°BBC	3°BTC	Hyd.	Hyd.	104°	116°
229-2222	241°	250°	16°BTC	45°ABC	60°BBC	10°ATC	Hyd.	Hyd.	105°	115°
229-2223	257°	264°	22°BTC	55°ABC	62°BBC	22°ATC	.026H	.026H	105°	111°
229-2224	190°	202°	14°ATC	24°ABC	36°BBC	14°BTC	Hyd.	Hyd.	108°	116°
229-2225	218°	218°	1°BTC	37°ABC	41°BBC	3°BTC	Hyd.	Hyd.	108°	112°
229-2226	230°	230°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2227	232°	232°	N/A	N/A	N/A	N/A	.006H	.010H	N/A	N/A
229-2228	229°	236°	5°BTC	44°ABC	57°BBC	1°BTC	Hyd.	Hyd.	109°	119°
229-2229	194°	207°	N/A	N/A	N/A	N/A	.008H	.008H	N/A	N/A
229-2231	197°	208°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-2232	ST	M	.320	.318	N/A	N/A	N/A	N/A	N/A
229-2234	ST	M	.228	.240	N/A	N/A	N/A	N/A	N/A
229-2235	ST	H	.257	.257	N/A	N/A	N/A	N/A	N/A
229-2236	ST	H	.291	.291	N/A	N/A	N/A	N/A	N/A
229-2237	ST	H	.265	.265	.440	.440	32°	275°	275°
229-2238	ST	H	.240	.240	.398	.398	20°	256°	256°
229-2239	ST	R	.265	.265	.439	.439	N/A	N/A	N/A
229-2241	ST	R	.239	.239	.397	.397	N/A	N/A	N/A
229-2242	ST	M	.244	.244	N/A	N/A	N/A	N/A	N/A
229-2243	ST	H	.238	.238	N/A	N/A	N/A	N/A	N/A
229-2244	ST	M	.388	.388	N/A	N/A	14°	N/A	N/A
229-2245	ST	H	.388	.388	N/A	N/A	14°	N/A	N/A
229-2246	ST	M	.229	.230	N/A	N/A	N/A	N/A	N/A
229-2247	ST	H	.246	.246	N/A	N/A	N/A	N/A	N/A
229-2248	ST	H	.246	.246	N/A	N/A	N/A	N/A	N/A
229-2249	ST	H	.276	.276	N/A	N/A	N/A	N/A	N/A
229-2250	ST	H	.276	.276	N/A	N/A	N/A	N/A	N/A
229-2251	ST	H	.263	.276	.384	.403	65°	277°	299°
229-2252	ST	H	.275	.275	.398	.398	N/A	264°	294°
229-2253	ST	H	.244	.244	N/A	N/A	N/A	N/A	N/A
229-2254	ST	HR	.253	.255	.405	.408	111°	290°	304°
229-2255	ST	HR	.253	.256	.404	.409	85°	298°	299°
229-2256	ST	HR	.244	.254	.390	.407	105°	291°	300°
229-2257	ST	HR	.260	.260	.417	.417	20°	270°	270°
229-2258	ST	HR	.270	.265	.405	.397	24°	276°	271°
229-2259	ST	H	.249	.254	.423	.439	62°	269°	272°
229-2260	ST	HR	.248	.248	.434	.434	47°	271°	271°
229-2261	ST	HR	.248	.248	.434	.434	44°	349°	349°
229-2262	ST	HR	.248	.248	.434	.434	44°	349°	349°
229-2263	ST	HR	.248	.248	.434	.434	47°	271°	271°
229-2264	ST	HR	.248	.248	.434	.434	47°	271°	271°
229-2265	ST	M	.282	.281	.451	.450	N/A	N/A	N/A
229-2266	ST	HR	.268	.268	.402	.402	22°	261°	261°
229-2267	ST	H	.234	.252	.412	.444	N/A	269°	278°
229-2268	ST	H	.234	.240	.374	.384	N/A	260°	280°
229-2269	ST	H	.254	.254	.381	.381	N/A	259°	259°
229-2270	ST	H	.222	.232	.389	.406	N/A	272°	276°
229-2272	ST	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2273	ST	HR	.258	.269	.439	.430	N/A	254°	267°
229-2274	ST	HR	.265	.265	.420	.420	22°	270°	259°
229-2275	ST	H	.248	.239	N/A	N/A	N/A	N/A	N/A
229-2276	ST	HR	.261	.261	.418	.418	N/A	272°	272°
229-2277	ST	H	.182	.229	N/A	N/A	N/A	N/A	N/A
229-2278	ST	HR	.250	.255	.400	.407	105°	291°	300°
229-2279	ST	M	.240	.239	.360	.358	N/A	229°	225°
229-2280	ST	H	.260	.273	.390	.410	N/A	258°	270°
229-2281	ST	M	.270	.271	N/A	N/A	N/A	N/A	N/A
229-2283	ST	HR	.263	.279	.421	.447	N/A	273°	283°
229-2285	ST	HR	.272	.277	.397	.404	N/A	278°	283°
229-2286	ST	HR	.288	.293	.432	.440	N/A	277°	274°
229-2287	ST	HR	.251	.268	.376	.402	N/A	254°	264°
229-2289	CP	M	.332	.332	.498	.498	64°	280°	280°
229-2290	P	H	.291	.291	.437	.437	84°	300°	300°
229-2291	CP	M	.386	.386	.579	.579	92°	312°	312°
229-2292	SP	H	.320	.320	.512	.512	68°	288°	288°
229-2293	P	M	.267	.275	.416	.429	N/A	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-2232	243°	242°	N/A	N/A	N/A	N/A	.012H	.012H	N/A	N/A
229-2234	N/A	N/A	N/A	N/A	N/A	N/A	.006H	.010H	N/A	N/A
229-2235	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2236	229°	229°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2237	209°	209°	7°ATC	36°ABC	45°BBC	16°BTC	Hyd.	Hyd.	111°	121°
229-2238	191°	191°	14°ATC	25°ABC	30°BBC	19°BTC	Hyd.	Hyd.	108°	116°
229-2239	210°	210°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2241	192°	192°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2242	210°	210°	N/A	N/A	N/A	N/A	.012H	.012H	N/A	N/A
229-2243	212°	212°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2244	208°	208°	N/A	N/A	N/A	N/A	.009H	.011H	N/A	N/A
229-2245	208°	208°	N/A	N/A	N/A	N/A	.009H	.011H	N/A	N/A
229-2246	217°	219°	N/A	N/A	N/A	N/A	Mech.	Mech.	N/A	N/A
229-2247	182°	182°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2248	182°	182°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2249	220°	220°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2250	220°	220°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2251	189°	205°	13°ATC	22°ABC	39°BBC	13°BTC	Hyd.	Hyd.	107°	117°
229-2252	154°	207°	14°ATC	18°ABC	30°BBC	8°BTC	Hyd.	Hyd.	108°	104°
229-2253	186°	186°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2254	182°	190°	24°ATC	26°ABC	24°BBC	14°BTC	Hyd.	Hyd.	115°	109°
229-2255	188°	190°	19°ATC	27°ABC	34°BBC	24°BTC	Hyd.	Hyd.	113°	119°
229-2256	185°	191°	16°ATC	21°ABC	32°BBC	21°BTC	Hyd.	Hyd.	109°	117°
229-2257	191°	191°	15°ATC	26°ABC	25°BBC	14°BTC	Hyd.	Hyd.	110°	110°
229-2258	197°	195°	15°ATC	32°ABC	32°BBC	17°BTC	Hyd.	Hyd.	113°	115°
229-2259	200°	206°	14°ATC	34°ABC	37°BBC	11°BTC	Hyd.	Hyd.	114°	114°
229-2260	192°	192°	14°ATC	26°ABC	30°BBC	18°BTC	Hyd.	Hyd.	109°	115°
229-2261	188°	188°	15°ATC	23°ABC	29°BBC	21°BTC	Hyd.	Hyd.	109°	115°
229-2262	188°	188°	15°ATC	23°ABC	29°BBC	21°BTC	Hyd.	Hyd.	109°	115°
229-2263	192°	192°	14°ATC	26°ABC	30°BBC	18°BTC	Hyd.	Hyd.	109°	115°
229-2264	192°	192°	14°ATC	26°ABC	30°BBC	18°BTC	Hyd.	Hyd.	109°	115°
229-2265	198°	192°	N/A	N/A	N/A	N/A	.018H	.028H	N/A	N/A
229-2266	189°	189°	24°ATC	33°ABC	22°BBC	14°BTC	Hyd.	Hyd.	118°	109°
229-2267	193°	203°	12°ATC	25°ABC	33°BBC	10°BTC	Hyd.	Hyd.	108°	113°
229-2268	187°	194°	14°ATC	21°ABC	28°BBC	14°BTC	Hyd.	Hyd.	107°	110°
229-2269	185°	185°	17°ATC	22°ABC	24°BBC	19°BTC	Hyd.	Hyd.	109°	112°
229-2270	172°	188°	20°ATC	12°ABC	12°BBC	4°BTC	Hyd.	Hyd.	106°	98°
229-2272	N/A	N/A	N/A	N/A	N/A	N/A	Mech.	Mech.	N/A	N/A
229-2273	184°	193°	22°ATC	26°ABC	27°BBC	14°BTC	Hyd.	Hyd.	114°	110°
229-2274	205°	196°	13°ATC	38°ABC	33°BBC	17°BTC	Hyd.	Hyd.	112°	116°
229-2275	192°	190°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2276	191°	191°	15°ATC	26°ABC	25°BBC	14°BTC	Hyd.	Hyd.	111°	117°
229-2277	184°	205°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2278	185°	191°	18°ATC	23°ABC	31°BBC	20°BTC	Hyd.	Hyd.	110°	116°
229-2279	184°	184°	13°ATC	17°ABC	17°BBC	13°BTC	.016H	.016H	103°	105°
229-2280	194°	202°	13°ATC	27°ABC	29°BBC	7°BTC	Hyd.	Hyd.	109°	109°
229-2281	224°	225°	N/A	N/A	N/A	N/A	Mech.	Mech.	N/A	N/A
229-2283	176°	197°	25°ATC	31°ABC	32°BBC	15°BTC	Hyd.	Hyd.	118°	113°
229-2285	194°	198°	16°ATC	30°ABC	36°BBC	18°BTC	Hyd.	Hyd.	113°	117°
229-2286	208°	208°	17°ATC	45°ABC	39°BBC	11°BTC	Hyd.	Hyd.	121°	115°
229-2287	183°	193°	17°ATC	20°ABC	30°BBC	17°BTC	Hyd.	Hyd.	108°	114°
229-2289	246°	246°	17°BTC	49°ABC	53°BBC	13°ATC	.030H	.030H	106°	110°
229-2290	224°	224°	5°BTC	39°ABC	41°BBC	3°ATC	Hyd.	Hyd.	107°	109°
229-2291	274°	274°	31°BTC	63°ABC	71°BBC	23°ATC	.022H	.022H	106°	114°
229-2292	231°	231°	9°BTC	42°ABC	49°BBC	2°BTC	Hyd.	Hyd.	106°	114°
229-2293	214°	224°	2°BTC	32°ABC	47°BBC	3°BTC	Mech.	Mech.	105°	115°



## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-2294	CP	M	.341	.357	.512	.536	90°	309°	318°
229-2295	P	H	.291	.293	.503	.507	106°	308°	314°
229-2296	P	H	.302	.320	.453	.479	64°	282°	294°
229-2297	CP	M	.345	.345	.518	.518	95°	319°	319°
229-2298	P	H	.310	.325	.496	.520	71°	300°	310°
229-2300	SP	H	.302	.302	.453	.453	88°	304°	304°
229-2301	CP	H	.339	.339	.576	.576	84°	304°	304°
229-2302	P	H	.258	.258	.457	.457	24°	266°	274°
229-2303	P	M	.275	.283	.429	.442	N/A	N/A°	N/A°
229-2305	P	H	.311	.325	.529	.553	76°	302°	308°
229-2311	P	H	.296	.311	.512	.538	73°	292°	302°
229-2313	SP	H	.320	.320	.480	.480	86°	302°	302°
229-2314	ST	H	.212	.214	N/A	N/A	N/A	N/A	N/A
229-2315	ST	HR	.247	.256	.427	.443	28°	268°	274°
229-2316	ST	HR	.260	.260	.426	.426	32°	287°	287°
229-2317	ST	HR	.260	.260	.426	.426	45°	287°	287°
229-2318	ST	HR	.252	.260	.413	.426	36°	282°	287°
229-2319	ST	N/A	.216	N/A	N/A	N/A	N/A	N/A	N/A
229-2320	ST	N/A	N/A	.216	N/A	N/A	N/A	N/A	N/A
229-2321	ST	N/A	.205	N/A	N/A	N/A	N/A	N/A	N/A
229-2322	ST	N/A	N/A	.205	N/A	N/A	N/A	N/A	N/A
229-2323	ST	H	.298	.306	.447	.459	46°	302°	324°
229-2324	ST	H	.258	.269	.413	.430	36°	253°	266°
229-2325	ST	H	.287	.287	.431	.431	39°	265°	265°
229-2326	ST	H	.272	.272	.408	.408	39°	263°	263°
229-2327	ST	HR	.282	.284	.479	.483	51°	273°	298°
229-2328	ST	HR	.276	.286	.414	.429	37°	260°	263°
229-2329	ST	H	.232	.232	.406	.406	49°	270°	270°
229-2330	ST	H	.287	.290	.494	.499	64°	270°	312°
229-2331	ST	H	.259	.259	N/A	N/A	N/A	N/A	N/A
229-2332	ST	H	.259	.259	N/A	N/A	N/A	N/A	N/A
229-2333	ST	H	.259	.259	N/A	N/A	N/A	N/A	N/A
229-2334	ST	H	.259	.259	N/A	N/A	N/A	N/A	N/A
229-2335	ST	H	.297	N/A	N/A	N/A	N/A	N/A	N/A
229-2336	ST	H	N/A	.297	N/A	N/A	N/A	N/A	N/A
229-2337	ST	HR	.292	.292	.496	.496	N/A	282°	290°
229-2338	ST	H	.255	.259	.408	.414	43°	256°	260°
229-2339	ST	M	.273	N/A	N/A	N/A	N/A	N/A	N/A
229-2340	ST	M	N/A	.299	N/A	N/A	N/A	N/A	N/A
229-2341	ST	H	.334	.334	N/A	N/A	N/A	N/A	N/A
229-2342	ST	M	.291	N/A	N/A	N/A	N/A	N/A	N/A
229-2343	ST	M	N/A	.296	N/A	N/A	N/A	N/A	N/A
229-2344	ST	M	.273	N/A	N/A	N/A	N/A	N/A	N/A
229-2345	ST	M	N/A	.273	N/A	N/A	N/A	N/A	N/A
229-2346	ST	M	.313	N/A	N/A	N/A	N/A	N/A	N/A
229-2347	ST	M	N/A	.315	N/A	N/A	N/A	N/A	N/A
229-2348	ST	H	.216	N/A	N/A	N/A	N/A	N/A	N/A
229-2349	ST		N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2350	MR	HR	.269	.273	.404	.410	N/A	272°	286°
229-2351	MR	HR	.289	.300	.434	.450	N/A	261°	276°
229-2353	MR	HR	.284	.284	.483	.483	N/A	296°	296°
229-2354	ST	HR	.276	.285	.414	.428	36°	261°	263°
229-2355	P	H	.319	.325	.478	.487	51°	273°	277°
229-2356	P	H	.295	.295	.502	.501	53°	277°	287°
229-2357	SP	H	.329	.337	.559	.572	85°	305°	311°
229-2358	P	H	.307	.318	.491	.509	69°	289°	300°

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-2294	262°	273°	23°BTC	59°ABC	69°BBC	24°ATC	.022H	.024H	108°	116°
229-2295	224°	223°	8°BTC	36°ABC	43°BBC	0°TDC	Hyd.	Hyd.	104°	112°
229-2296	216°	228°	1°BTC	35°ABC	51°BBC	3°BTC	Hyd.	Hyd.	107°	117°
229-2297	278°	278°	29°BTC	69°ABC	73°BBC	25°ATC	.030H	.030H	107°	117°
229-2298	224°	234°	5°BTC	39°ABC	54°BBC	0°TDC	Hyd.	Hyd.	107°	117°
229-2300	226°	226°	7°BTC	39°ABC	43°BBC	3°ATC	Hyd.	Hyd.	106°	110°
229-2301	246°	246°	13°BTC	53°ABC	57°BBC	9°ATC	Hyd.	Hyd.	106°	114°
229-2302	215°	223°	7°BTC	28°ABC	51°BBC	8°BTC	Hyd.	Hyd.	110°	110°
229-2303	224°	234°	7°BTC	37°ABC	52°BBC	2°ATC	Mech.	Mech.	105°	115°
229-2305	224°	234°	2°BTC	42°ABC	55°BBC	1°BTC	Hyd.	Hyd.	110°	118°
229-2311	214°	224°	0°TDC	34°ABC	49°BBC	5°BTC	Hyd.	Hyd.	107°	117°
229-2313	236°	236°	10°BTC	46°ABC	46°BBC	10°ATC	Hyd.	Hyd.	108°	108°
229-2314	N/A	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2315	175°	180°	25°ATC	20°ABC	18°BBC	18°BTC	Hyd.	Hyd.	113°	108°
229-2316	200°	200°	25°ATC	45°ABC	38°BBC	18°BTC	Hyd.	Hyd.	124°	119°
229-2317	200°	200°	12°ATC	32°ABC	38°BBC	18°BTC	Hyd.	Hyd.	111°	119°
229-2318	192°	200°	19°ATC	31°ABC	40°BBC	20°BTC	Hyd.	Hyd.	115°	121°
229-2319	175°	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2320	N/A	175°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2321	166°	N/A	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2322	N/A	166°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2323	213°	225°	6°ATC	39°ABC	50°BBC	5°BTC	Hyd.	Hyd.	112°	118°
229-2324	184°	193°	17°ATC	21°ABC	32°BBC	19°BTC	Hyd.	Hyd.	109°	115°
229-2325	198°	198°	18°ATC	36°ABC	28°BBC	10°BTC	Hyd.	Hyd.	116°	110°
229-2326	197°	197°	15°ATC	32°ABC	29°BBC	12°BTC	Hyd.	Hyd.	113°	111°
229-2327	204°	209°	15°ATC	39°ABC	42°BBC	13°BTC	Hyd.	Hyd.	118°	118°
229-2328	191°	195°	11°ATC	22°ABC	33°BBC	18°BTC	Hyd.	Hyd.	106°	116°
229-2329	186°	186°	15°ATC	21°ABC	26°BBC	20°BTC	Hyd.	Hyd.	108°	113°
229-2330	208°	220°	7°ATC	35°ABC	47°BBC	7°BTC	Hyd.	Hyd.	111°	117°
229-2331	188°	196°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2332	188°	196°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2333	188°	196°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2334	188°	196°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2335	204°	N/A	N/A	N/A	N/A	N/A	.008H	.008H	N/A	N/A
229-2336	N/A	204°	N/A	N/A	N/A	N/A	.008H	.008H	N/A	N/A
229-2337	197°	209°	24°ATC	41°ABC	41°BBC	12°BTC	Hyd.	Hyd.	123°	116°
229-2338	188°	192°	6°ATC	14°ABC	30°BBC	18°BTC	Hyd.	Hyd.	100°	115°
229-2339	196°	N/A	N/A	N/A	N/A	N/A	.008H	N/A	N/A	N/A
229-2340	N/A	209°	N/A	N/A	N/A	N/A	N/A	.013H	N/A	N/A
229-2341	201°	201°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A
229-2342	194°	N/A	N/A	N/A	N/A	N/A	.008H	N/A	N/A	N/A
229-2343	N/A	200°	N/A	N/A	N/A	N/A	N/A	.008H	N/A	N/A
229-2344	189°	N/A	N/A	N/A	N/A	N/A	.008H	N/A	N/A	N/A
229-2345	N/A	189°	N/A	N/A	N/A	N/A	N/A	.010H	N/A	N/A
229-2346	192°	N/A	N/A	N/A	N/A	N/A	.008H	N/A	N/A	N/A
229-2347	N/A	193°	N/A	N/A	N/A	N/A	N/A	.010H	N/A	N/A
229-2348	174°	N/A	N/A	N/A	N/A	N/A	.008H	N/A	N/A	N/A
229-2349	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2350	202°	213°	7°ATC	29°ABC	41°BBC	8°BTC	Hyd.	Hyd.	108°	116°
229-2351	197°	206°	8°ATC	25°ABC	36°BBC	10°BTC	Hyd.	Hyd.	105°	114°
229-2353	224°	224°	0°TDC	44°ABC	51°BBC	7°BTC	Hyd.	Hyd.	113°	118°
229-2354	191°	194°	12°ATC	23°ABC	32°BBC	18°BTC	Hyd.	Hyd.	106°	116°
229-2355	210°	214°	2°ATC	32°ABC	44°BBC	10°BTC	Hyd.	Hyd.	107°	117°
229-2356	218°	228°	0°TDC	38°ABC	53°BBC	5°BTC	Hyd.	Hyd.	109°	119°
229-2357	240°	246°	10°BTC	50°ABC	57°BBC	9°ATC	Hyd.	Hyd.	110°	114°
229-2358	212°	222°	3°ATC	35°ABC	49°BBC	7°BTC	Hyd.	Hyd.	107°	117°

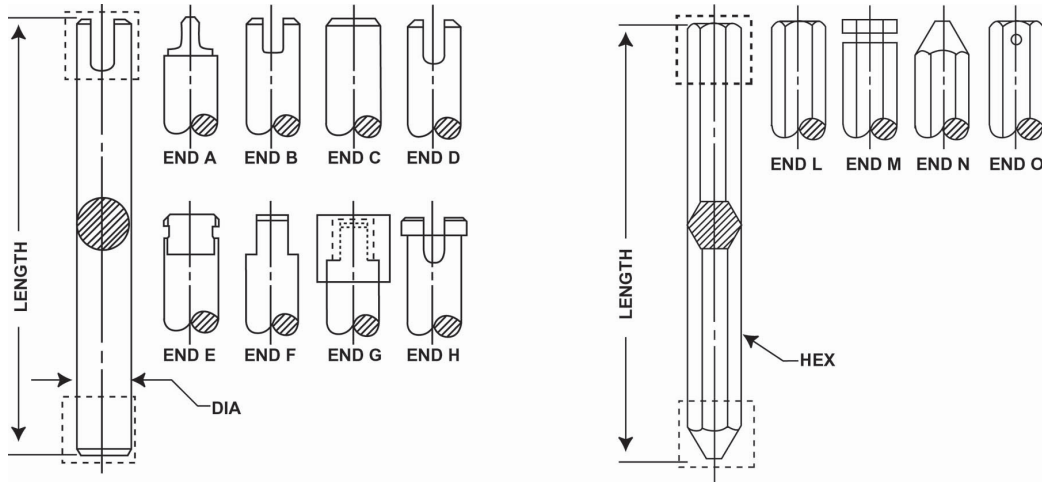
## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	Perf. Code	Type	Intake Cam Lift	Exhaust Cam Lift	Gross Intake Valve Lift	Gross Exhaust Valve Lift	SAE Overlap	SAE	
					(Measured Zero Lash)			Intake Duration	Exhaust Duration
229-2359	P	H	.318	.332	.509	.532	79°	300°	309°
229-2360	MPG	H	.265	.294	.398	.442	56°	268°	288°
229-2361	ST	HR	.257	.255	.411	.408	39°	260°	275°
229-2362	ST	HR	.245	.257	.424	.445	48°	270°	279°
229-2363	ST	HR	.298	.306	.447	.459	37°	270°	276°
229-2364	ST	HR	.276	.286	.414	.428	36°	259°	263°
229-2365	ST	HR	.300	.307	.450	.460	36°	268°	271°
229-2366	P	HR	.330	.335	.495	.503	65°	283°	287°
229-2367	P	HR	.333	.333	.566	.566	63°	291°	291°
229-2368	SP	HR	.368	.376	.626	.639	106°	335°	329°
229-2369	CP	HR	.330	.340	.560	.570	84°	305°	310°
229-2370	P	H	.320	.324	.480	.486	67°	283°	291°
229-2373	ST	H	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2374	ST	H	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2375	ST	HR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2376	ST	HR	.274	.278	.411	.417	43°	251°	271°
229-2377	P	HR	.320	.320	.512	.512	65°	286°	292°
229-2378	SP	HR	.325	.325	.520	.520	74°	298°	302°
229-2379	ST	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2380	ST	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2381	ST	HR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2382	ST	HR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2383	ST	HR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2384	ST	HR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2385	ST	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2386	ST	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2387	ST	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2388	ST	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2389	MPG	HR	.290	.308	.435	.462	57°	273°	288°
229-2390	P	HR	.308	.313	.462	.470	68°	288°	284°
229-2391	P	HR	.319	.334	.479	.501	67°	297°	307°
229-2392	SP	HR	.320	.320	.480	.480	90°	306°	306°
229-2393	MPG	HR	.290	.308	.435	.462	57°	273°	288°
229-2394	P	HR	.308	.313	.462	.470	68°	288°	284°
229-2395	SP	HR	.320	.320	.480	.480	90°	306°	306°
229-2396	P	HR	.295	.300	.501	.510	70°	288°	300°
229-2397	P	HR	.310	.320	.527	.544	82°	296°	308°
229-2398	SP	HR	.330	.340	.561	.578	100°	316°	324°
229-2399	ST	H	.239	.239	N/A	N/A	N/A	N/A	N/A

## LIGHT VEHICLE CAMSHAFT SPECIFICATIONS

Part Number	.050"		Valve Timing At .050"				Intake Valve Lash	Exhaust Valve Lash	Intake Lobe Center	Exhaust Lobe Center
	Intake Duration	Exhaust Duration	Intake Valve Open	Intake Valve Close	Exhaust Valve Open	Exhaust Valve Close				
229-2359	222°	232°	5°BTC	37°ABC	55°BBC	3°BTC	Hyd.	Hyd.	107°	117°
229-2360	194°	214°	10°ATC	24°ABC	44°BBC	10°BTC	Hyd.	Hyd.	107°	117°
229-2361	181°	191°	27°ATC	28°ABC	28°BBC	17°BTC	Hyd.	Hyd.	118°	112°
229-2362	185°	193°	22°ATC	27°ABC	26°BBC	13°BTC	Hyd.	Hyd.	114°	110°
229-2363	201°	208°	18°ATC	39°ABC	39°BBC	11°BTC	Hyd.	Hyd.	117°	117°
229-2364	191°	195°	12°ATC	23°ABC	32°BBC	17°BTC	Hyd.	Hyd.	106°	116°
229-2365	202°	208°	16°ATC	38°ABC	40°BBC	12°BTC	Hyd.	Hyd.	116°	117°
229-2366	220°	224°	3°BTC	37°ABC	45°BBC	1°BTC	Hyd.	Hyd.	107°	113°
229-2367	223°	223°	1°BTC	42°ABC	49°BBC	6°BTC	Hyd.	Hyd.	110°	118°
229-2368	237°	245°	6°BTC	51°ABC	54°BBC	11°ATC	Hyd.	Hyd.	109°	115°
229-2369	241°	246°	12°BTC	49°ABC	57°BBC	9°ATC	Hyd.	Hyd.	110°	114°
229-2370	224°	230°	7°BTC	37°ABC	51°BBC	1°BTC	Hyd.	Hyd.	107°	113°
229-2373	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2374	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2375	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2376	188°	194°	22°ATC	30°ABC	23°BBC	9°BTC	Hyd.	Hyd.	116°	107°
229-2377	220°	223°	1°BTC	39°ABC	46°BBC	3°BTC	Hyd.	Hyd.	109°	115°
229-2378	227°	234°	6°BTC	41°ABC	54°BBC	0°TDC	Hyd.	Hyd.	107°	117°
229-2379	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2380	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2381	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2382	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2383	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2384	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2385	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2387	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2388	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229-2389	198°	210°	9°ATC	27°ABC	41°BBC	11°BTC	Hyd.	Hyd.	108°	116°
229-2390	210°	215°	1°ATC	31°ABC	41°BBC	6°BTC	Hyd.	Hyd.	106°	114°
229-2391	222°	232°	2°BTC	40°ABC	55°BBC	3°BTC	Hyd.	Hyd.	109°	119°
229-2392	230°	230°	9°BTC	41°ABC	45°BBC	5°ATC	Hyd.	Hyd.	106°	110°
229-2393	198°	210°	9°ATC	27°ABC	41°BBC	11°BTC	Hyd.	Hyd.	108°	116°
229-2394	210°	215°	1°ATC	31°ABC	41°BBC	6°BTC	Hyd.	Hyd.	106°	114°
229-2395	230°	230°	9°BTC	41°ABC	45°BBC	5°ATC	Hyd.	Hyd.	106°	110°
229-2396	216°	228°	0°TDC	36°ABC	50°BBC	2°BTC	Hyd.	Hyd.	108°	116°
229-2397	224°	234°	6°BTC	38°ABC	51°BBC	3°ATC	Hyd.	Hyd.	106°	114°
229-2398	236°	246°	12°BTC	44°ABC	57°BBC	9°ATC	Hyd.	Hyd.	106°	114°
229-2399	190°	190°	N/A	N/A	N/A	N/A	Hyd.	Hyd.	N/A	N/A

## INTERMEDIATE SHAFT IDENTIFICATION CHART



Part Number	Length	Hex or Diameter	End Type	Part Number	Length	Hex or Diameter	End Type
601-1402	8.06	1/4 Hex	L & N	601-1435	3.00	5/16 Hex	N & N
601-1403	8.53	1/4 Hex	L & N	601-1436	7.50	.500	D & H
601-1405	3.84	1/4 Hex	L & O	601-1437	7.94	.486	Right Hand Helix
601-1408	5.77	.483	D & E	601-1438	8.68	.486	Left Hand Helix
601-1409	5.96	.483	D & G	601-1440	8.75	5/16 Hex	L & L
601-1411	3.95	1/4 Hex	M & N	601-1441	4.34	5/16 Hex	L & L
601-1412	7.44	1/4 Hex	L & N	601-1442	8.31	5/16 Hex	L & L
601-1413	3.95	5/16 Hex	M & N	601-1444	7.28	6mm Hex	L & N
601-1415	8.14	5/16 Hex	L & L	601-1445	8.25	.665	9mm Internal Hex Both Ends
601-1416	5.14	5/16 Hex	N & N	601-1447	4.41	.489	C & D
601-1417	4.52	5/16 Hex	L & M	601-1448	3.13	1/4 Hex	N & N
601-1418	6.72	.483	D & G	601-1449	7.29	.270	Spline
601-1419	6.52	.483	D & E	601-1453	8.06	.231	Spline
601-1421	6.53	.479	F & G	601-1505	1.882	.560	Gear & Single Flat
601-1424	9.34	5/16 Hex	N & N	601-1506	1.773	.560	Gear & Single Flat
601-1425	8.19	5/16 Hex	N & N	601-6002	6.50	.483	D & G
601-1426	4.14	5/16 Hex	N & N	601-8134	8.89	5/16 Hex	L & L
601-1427	5.30	.483	D & E	601-8135	10.11	5/16 Hex	L & M
601-1428	5.75	.478	F & G	601-8136	6.74	5/16 Hex	L & M
601-1431	8.44	5/16 Hex	N & N				
601-1432	8.53	5/16 Hex	L & N				
601-1434	2.31	6mm Hex	L & L				

## TIMING BELT SPECIFICATIONS

Part Number	No. of Teeth	Width		Nominal Length		Part Number	No. of Teeth	Width		Nominal Length	
		inch	mm	inch	mm			inch	mm	inch	mm
TB-13	122	.748	19.0	45.748	1162.0	TB-138	163	1.051	26.7	51.338	1304.0
TB-14	129	.878	22.3	48.374	1228.7	TB-139	149	1.000	25.4	55.874	1419.2
TB-17	121	.709	18	45.374	1152.5	TB-141	107	.831	21.1	33.701	856.0
TB-18	116	.748	19	43.500	1104.9	TB-142	124	.945	24	46.500	1181.1
TB-20	146	.748	19	5.4960	139.6	TB-143	106	.945	24	39.748	1009.6
TB-28	84	.748	19	31.500	800.1	TB-144	107	.945	24	40.126	1019.2
TB-32	123	.748	19	46.126	1171.6	TB-145	107	.945	24	40.126	1019.2
TB-36	94	.748	19	35.248	895.3	TB-146	173	1.181	30	54.488	1384.0
TB-37	99	.591	15	37.205	945.0	TB-147	137	1.000	25.4	43.15	1096.0
TB-39	99	.748	19	37.205	945.0	TB-148	104	.669	17	39.000	990.6
TB-41	95	.748	19	35.626	904.9	TB-150	118	.866	22	37.165	944.0
TB-43	135	.984	25	50.626	1285.9	TB-151	139	1.102	28	43.779	1112.0
TB-61	100	.748	19	37.579	954.5	TB-153	124	.937	23.8	46.500	1181.1
TB-62	55	.500	12.7	20.626	523.9	TB-154	193	1.417	36	60.787	1544.0
TB-64	120	.748	19	45.000	1143.0	TB-155	122	.945	24	45.748	1162.0
TB-65	113	.748	19	42.374	1076.3	TB-156	148	1.000	25.4	55.500	1409.7
TB-67	97	1.000	25.4	36.374	923.9	TB-157	179	1.252	31.8	56.378	1432.0
TB-70	88	.748	19	33.000	838.2	TB-158	122	.748	19	45.748	1162.0
TB-71	124	.972	24.7	46.500	1181.1	TB-159	55	.500	12.7	20.626	523.9
TB-73	92	.748	19	34.500	876.3	TB-160	108	.945	24	40.500	1028.7
TB-74	142	1.000	25.4	53.248	1352.5	TB-161	101	.945	24	37.874	962.0
TB-75	87	1.339	34	32.626	828.7	TB-162	112	.748	19	35.276	896.0
TB-76	134	1.181	30	50.248	1276.3	TB-163	125	.787	20	46.874	1190.6
TB-77	106	.748	19	39.748	1009.6	TB-164	95	.748	19	35.626	904.9
TB-78	98	.748	19	36.748	933.4	TB-165	151	1.142	29	56.626	1438.3
TB-79	127	1.000	25.4	47.626	1209.7	TB-166	97	.748	19	36.374	923.9
TB-81	111	.787	20	41.626	1057.3	TB-167	153	1.142	29	57.374	1457.3
TB-84	130	1.000	25.4	48.748	1238.2	TB-168	65	.500	12.7	20.472	520.0
TB-86	69	.748	19	25.874	657.2	TB-169	159	1.000	25.4	50.079	1272.0
TB-87	139	1.000	25.4	52.126	1324.0	TB-170	142	.748	19	44.724	1136.0
TB-88	109	.748	19	40.874	1038.2	TB-171	119	.984	25	44.626	1133.5
TB-89	122	.748	19	45.748	1162.0	TB-172	211	1.181	30	66.457	1688.0
TB-90	55	.500	12.7	20.626	523.9	TB-173	164	.906	23	61.500	1562.1
TB-91	163	1.000	25.4	61.126	1552.6	TB-174	110	.551	14	41.248	1047.7
TB-93	120	.748	19	45.000	1143.0	TB-176	113	.748	19	42.374	1076.3
TB-94	108	.945	24	40.500	1028.7	TB-177	112	.984	25	35.276	896.0
TB-95	89	.748	19	33.374	847.7	TB-178	91	.748	19	34.126	866.8
TB-96	117	1.000	25.4	43.874	1114.4	TB-179	145	.866	22	45.669	1160.0
TB-98	177	.984	25	66.374	1685.9	TB-180	228	1.252	31.8	71.811	1824.0
TB-99	101	.945	24	37.874	962.0	TB-181	93	.984	25	34.874	885.8
TB-101	169	1.000	25.4	53.228	1352.0	TB-182	95	.984	25	35.626	904.9
TB-104	133	1.000	25.4	49.874	1266.8	TB-183	239	1.378	35	75.275	1912.0
TB-106	128	.984	25	41.425	1052.2	TB-184	125	1.024	26	46.874	1190.6
TB-107	117	.748	19	43.874	1114.4	TB-185	107	.846	21.5	33.701	856.0
TB-108	110	.591	15	41.248	1047.7	TB-186	70	.630	16	26.248	666.7
TB-111	116	.748	19	43.500	1104.9	TB-187	113	.945	24	42.374	1076.3
TB-112	113	.748	19	42.374	1076.3	TB-188	133	1.000	25.4	49.874	1266.8
TB-113	109	.748	19	40.874	1038.2	TB-189	113	.669	17	42.374	1076.3
TB-114	126	.937	23.8	47.248	1200.1	TB-190	209	1.339	34	65.827	1672.0
TB-117	109	.866	22	40.874	1038.2	TB-191	92	.866	22	34.500	876.3
TB-118	112	.669	17	35.276	896.0	TB-192	169	1.339	34	63.374	1609.7
TB-119	124	.748	19	46.500	1181.1	TB-193	196	1.102	28	73.500	1866.9
TB-120	134	1.000	25.4	50.248	1276.3	TB-194	97	1.000	25.4	36.374	923.9
TB-121	111	.748	19	41.626	1057.3	TB-195	257	1.260	32	80.945	2056.0
TB-122	115	.787	20	43.126	1095.4	TB-196	219	1.000	25.4	82.126	2086.0
TB-124	123	.748	19	46.126	1171.6	TB-197	147	.748	19	46.299	1176.0
TB-125	178	1.000	25.4	56.063	1424.0	TB-198	167	.906	23	62.626	1590.7
TB-126	159	1.000	25.4	50.079	1272.0	TB-199	163	1.051	26.7	51.338	1304.0
TB-127	120	.709	18	45.000	1143.0	TB-200	191	1.252	31.8	60.157	1528.0
TB-128	92	.748	19	34.500	876.3	TB-201	121	1.142	29	38.110	968.0
TB-129	192	1.102	28	72.000	1828.8	TB-203	111	.669	17	41.626	1057.3
TB-130	129	.945	24	48.374	1228.7	TB-204	123	.945	24	46.126	1171.6
TB-131	127	.984	25	41.098	1043.9	TB-205	163	1.000	25.4	51.338	1304.0
TB-132	126	.937	23.8	47.248	1200.1	TB-206	131	1.181	30	49.126	1247.8
TB-134	110	1.000	25.4	41.248	1047.7	TB-207	299	1.181	30	94.173	2392.0
TB-135	89	.748	19	33.374	847.7	TB-208	128	1.024	26	40.315	1024.0
TB-136	127	.945	24	40.000	1016.0	TB-209	241	1.339	34	75.905	1928.0
TB-137	151	.748	19	47.559	1208.0	TB-210	129	.878	22.3	48.374	1228.7

## TIMING BELT SPECIFICATIONS

Part Number	No. of Teeth	Width		Nominal Length		Part Number	No. of Teeth	Width		Nominal Length	
		inch	mm	inch	mm			inch	mm	inch	mm
TB-211	113	.827	21	42.374	1076.3	TB-258	131	1.000	25.4	49.126	1247.8
TB-212	103	1.000	25.4	38.626	981.1	TB-259	187	1.260	32	58.898	1496.0
TB-214	192	1.181	30	60.472	1536.0	TB-262	124	.709	18	46.500	1181.1
TB-215	143	1.000	25.4	45.039	1144.0	TB-263	192	.945	24	72.000	1828.8
TB-216	127	.945	24	47.626	1209.7	TB-264	108	1.000	25.4	40.500	1028.7
TB-217	143	.827	21	53.626	1362.1	TB-265	146	1.102	28	54.748	1390.6
TB-218	239	1.000	25.4	75.275	1912.0	TB-266	125	.866	22	39.370	1000.0
TB-219	200	1.181	30	62.992	1600.0	TB-267	201	1.181	30	63.307	1608.0
TB-220	218	1.252	31.8	68.661	1744.0	TB-270	152	1.102	28	57.000	1447.8
TB-221	223	1.252	31.8	70.236	1784.0	TB-271	191	1.417	36	60.157	1528.0
TB-222	78	.787	20	24.567	624.0	TB-272	89	1.000	25.4	33.374	847.7
TB-223	103	.945	24	38.626	981.1	TB-273	200	1.339	34	62.992	1600.0
TB-224	104	.945	24	39.000	990.6	TB-276	131	.878	22.3	49.126	1247.8
TB-226	155	.945	24	48.819	1240.0	TB-277	281	1.181	30	88.504	2248.0
TB-227	124	1.024	26	46.500	1181.1	TB-278	111	1.000	25.4	41.626	1057.3
TB-228	135	1.000	25.4	42.520	1080.0	TB-279	197	.945	24	73.874	1876.4
TB-229	123	.748	19	46.126	1171.6	TB-281	168	1.000	25.4	52.913	1344.0
TB-230	124	1.142	29	46.500	1181.1	TB-282	105	.866	22	39.374	1000.1
TB-232	123	1.142	29	46.126	1171.6	TB-283	99	1.000	25.4	37.126	943.0
TB-233	127	.945	24	40.000	1016.0	TB-284	113	1.000	25.4	42.374	1076.3
TB-234	123	.748	19	46.126	1171.6	TB-285	225	1.181	30	70.866	1800.0
TB-235	121	.831	21.1	38.110	968.0	TB-286	197	1.024	26	62.047	1576.0
TB-236	117	.831	21.1	36.850	936.0	TB-287	195	1.26	32	61.417	1560.0
TB-237	159	1.000	25.4	50.079	1272.0	TB-288	116	1.142	29	36.535	928.0
TB-238	124	1.000	25.4	46.500	1181.1	TB-289	107	1.000	25.4	33.701	856.0
TB-239	94	.748	19	35.248	895.3	TB-291	152	.984	25	47.874	1216.0
TB-240	193	1.417	36	60.787	1544.0	TB-292	147	.984	25	46.299	1176.0
TB-241	97	.748	19	36.374	923.9	TB-294	129	1.000	25.4	48.374	1228.7
TB-242	137	1.000	25.4	51.374	1304.9	TB-295	201	1.181	30	63.307	1608.0
TB-243	89	.748	19	33.374	847.7	TB-296	138	.906	23	43.464	1104.0
TB-244	112	.945	24	42.000	1066.8	TB-297	253	1.181	30	79.685	2024.0
TB-245	112	1.142	29	42.000	1066.8	TB-298	211	1.339	34	66.457	1688.0
TB-246	150	1.142	29	56.248	1428.7	TB-299	119	.748	19	44.626	1133.5
TB-247	126	1.024	26	47.248	1200.1	TB-300	98	.748	19	36.748	933.4
TB-248	155	1.260	32	48.819	1240.0	TB-301	141	.984	25	52.874	1343.0
TB-249	133	1.000	25.4	49.874	1266.8	TB-302	154	.846	21.5	48.504	1232.0
TB-251	228	1.252	31.8	71.811	1824.0	TB-303	191	1.252	31.8	60.157	1528.0
TB-252	148	.906	23	55.500	1409.7	TB-304	223	1.063	27	70.236	1784.0
TB-253	265	1.260	32	83.464	2120.0	TB-308	123	.846	21.5	38.839	986.5
TB-254	211	1.181	30	66.457	1688.0	TB-309	169	.945	24	53.228	1352.0
TB-255	202	1.181	30	63.622	1616.0	TB-310	127	1.000	25.4	47.626	1209.7
TB-256	154	1.142	29	57.827	1468.8	TB-312	104	.866	22	39.000	990.6
TB-257	211	1.260	32	66.457	1688.0	TB-316	133	1.000	25.4	41.890	1064.0

## TIMING CHAIN SPECIFICATIONS

Part Number	Symbol	No. of Links	Width		Pitch		Part Number	Symbol	No. of Links	Width		Pitch	
			In.	mm	in.	mm				In.	mm	in.	mm
9-160	RCD	68	DBL.		.375	9.53	9-375	SF	54	.438	11.11	.375	9.53
9-161	RCD	56	DBL		.375	9.53	9-376	SF	60	.750	19.05	.375	9.53
9-162	RCD	64	DBL		.375	9.53	9-377	SF	54	.750	19.05	.375	9.53
9-163	RCD	58	DBL		.375	9.53	9-378	SF	56	.750	19.05	.375	9.53
9-166	RCD	86	DBL		.375	9.53	9-380	SF	68	.750	19.05	.375	9.53
9-168	RCD	66	DBL		.3771	9.58	9-381	SF	54	.438	11.11	.375	9.53
9-169	RCD	64	DBL		.375	9.53	9-381A	SF	64	.500	12.70	.313	7.95
9-170	RCD	86	DBL		.375	9.53	9-382	SF	64	.750	19.05	.375	9.53
9-172	RCS	46	SNGL		.375	9.53	9-383	SF	130	.500	12.70	.375	9.53
9-179	RCD	62	DBL		.375	9.53	9-384	SF	124	.500	12.70	.375	9.53
9-180	RCS	48	SNGL		.500	12.70	9-385	SF	64	.625	15.88	.375	9.53
9-181	RCD	48	DBL		.500	12.70	9-387	SF	116	.500	12.70	.375	9.53
9-184	RCS	48	SGL		.500	12.70	9-388	SF	64	.750	19.05	.375	9.53
9-185	RCS	116	SGL		.375	9.53	9-390	SF	130	.500	12.70	.375	9.53
9-348	SN	68	1.000	25.40	.375	9.53	9-391	SF	122	.500	12.70	.375	9.53
9-349	SN	62	.875	22.23	.375	9.53	9-393	SN	35	.500	8.20	.323	8.20
9-350	SN	60	.875	22.23	.375	9.53	9-394	SN	53	.500	8.20	.323	8.20
9-351	SN	50	.750	19.05	.375	9.53	9-401	CN	48	1.000	25.40	.500	12.70
9-352	SN	86	.875	22.23	.375	9.53	9-489	SN	46	.750	19.05	.500	12.70
9-354	SN	56	1.000	25.40	.375	9.53	9-490	SN	48	1.000	25.40	.500	12.70
9-356	SN	58	.750	19.05	.375	9.53	9-491	SN	52	.750	19.05	.500	12.70
9-358	SN	58	.625	15.88	.375	9.53	9-495	SN	50	.750	19.05	.500	12.70
9-359	SF	54	.750	19.05	.375	9.53	9-498	SN	48	.625	15.88	.500	12.70
9-361	SN	68	.625	15.88	.375	9.53	9-499	SN	46	.625	15.88	.500	12.70
9-365	SN	60	.750	19.05	.375	9.53	9-501	SN	50	.625	15.88	.625	15.88
9-366	SN	56	.750	19.05	.375	9.53	9-503	SF	44	.625	15.88	.625	15.88
9-369	SF	62	.750	19.05	.375	9.53	9-504	SF	48	.750	19.05	.625	15.88
9-370	SF	58	.750	19.05	.375	9.53	9-505	SF	46	.750	19.05	.500	12.70
9-372	SF	64	.625	15.88	.375	9.53	9-506	SF	46	.625	15.88	.500	12.70
9-373	SF	64	.750	19.05	.375	9.53	9-509	SN	46	.625	15.88	.500	12.70
9-374	SF	62	.750	19.05	.375	9.53							

**RPN** -Big Round Pin, Flexible, Single Side Guide

**SF**-Single Side Guide, Flexible

**SN**-Single Side Guide, No Back Bend

**SSG**-Single Side Guide, Modified Side Back



Featuring:

**CLEVITE 77<sup>®</sup>**  
**VICTOR REINZ<sup>®</sup>**  
**PERFECT CIRCLE<sup>®</sup>**



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