By Dave Fiedler

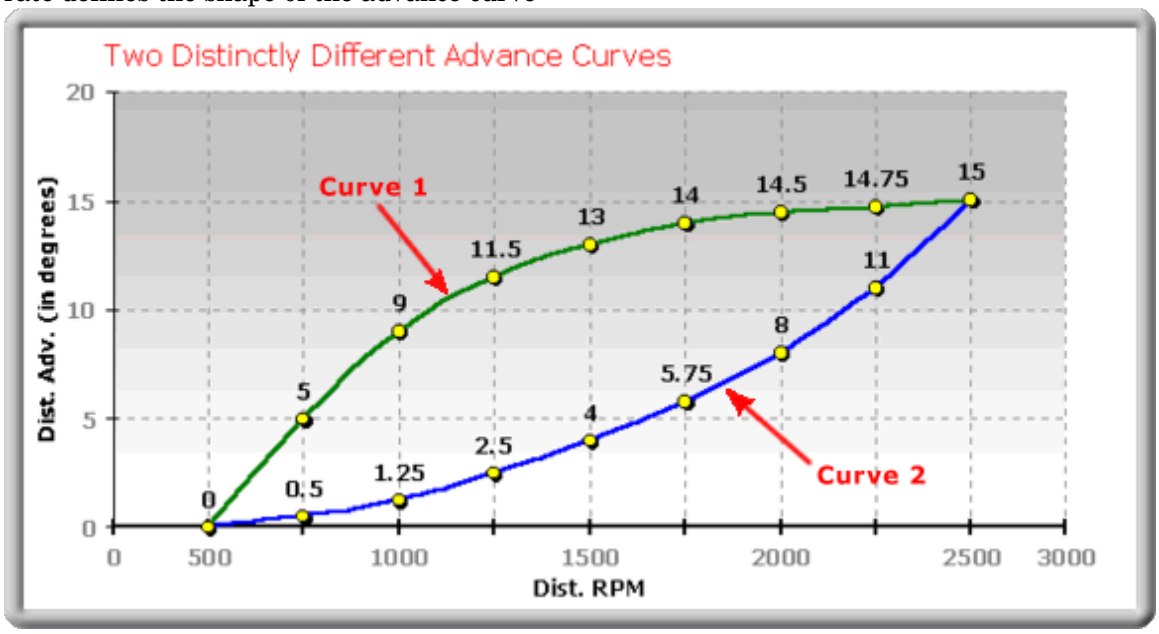
It a common misconception that any Transistor Ignition (TI) tach-drive distributor will fit any Corvette application regardless of engine displacement, horsepower, or year of manufacture. From 1964 through 1971 (eight years) there were 23 TI distributor part numbers used and an equivalent amount of applications. The reason for these 23 applications goes back to basic engine design in terms of camshaft duration, carburetion, compression ratio, etc.; since all these things affect the spark timing requirements of an engine. In order to obtain maximum horsepower and torque for any given combination of parts, you have to have the right spark timing. It is not enough to merely direct a spark to each cylinder, it has to get there at precisely the right time, based on engine design, RPM, and load. This "right time" is what defines the correct advance curve. Basically, because of variations in advance requirements, there were 23 part numbers created to cover all applications. All 23 TI distributors, with their corresponding advance assemblies are different. Therefore, if you take a TI distributor designed for a 1964 small block and put it in a 1969 big block, chances are you will get very poor performance. This is a good reason to find the correct part number when replacing a TI distributor.

Another misconception is TI uses electronic spark control. The level of sophistication of the TI electrical circuitry does *not* allow for electronic spark advance. In TI, all spark control remains a function of the TI distributor and is accomplished by mechanical means.

Let's take a look at the various parts of a TI distributor and see how they affect the advance curve. There are five (5) parts used in combination to alter the advance curve. These parts are:

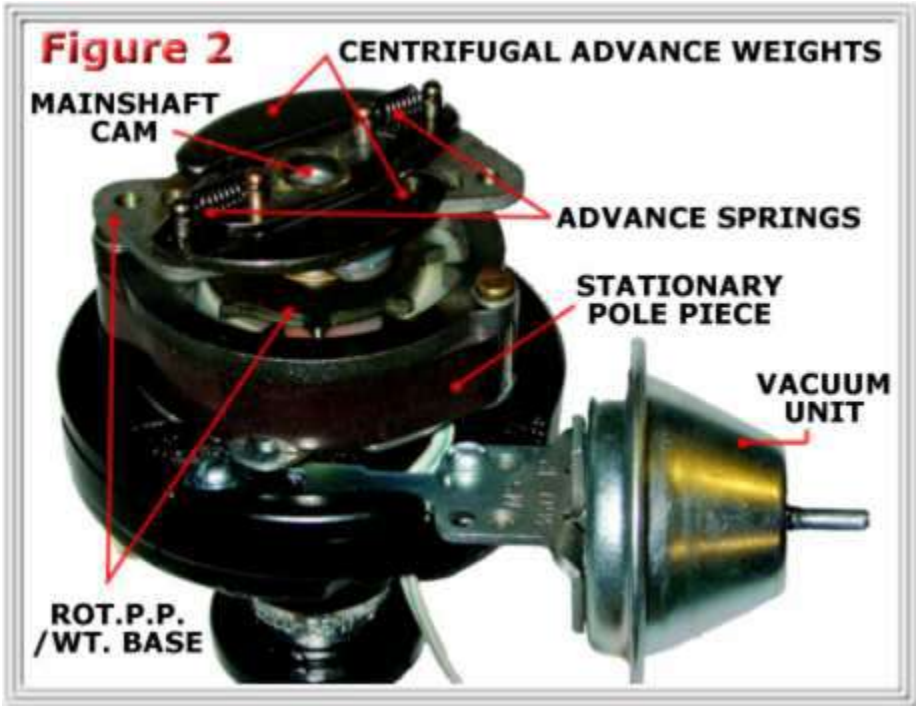
- Mainshaft Cam
- Advance Weights
- Rotating Pole Piece/Weight Base (Rot.P.P./Wt. Base)
- Advance Springs
- Vacuum Advance Unit

The mainshaft cam, located at the top of the mainshaft, controls the rate of advance. This rate defines the shape of the advance curve



Therefore, the correct cam is the foundation for the correct advance curve. There are 18 different mainshaft cams used on the 23 Corvette TI distributors.

Advance weights also play an important part in the advance system because centrifugal force acting on them, through the mainshaft cam, cause the Rot.P.P./Wt. Base (one piece) to rotate independent of the mainshaft rotation



Since the distributor rotor is attached to the Rot.P.P./Wt. Base, and that assembly is moving clockwise relative to the mainshaft, the result is an advanced spark (Rot.P.P./Wt. Base rotation in degrees is equivalent to centrifugal distributor advance in degrees). In addition, the Rot.P.P./Wt. Base also determines the total amount of advance achievable. There are ten (10) Rot.P.P./Wt. Bases and three (3) styles of weights used on the 23 Corvette TI distributors.

Advance springs also have an affect on the advance curve, but not to the degree most people think. Advance spring tension simply determines at what RPM the advance curve starts and finishes, but it has nothing to do with the shape of the advance curve. Advance springs merely shift the advance curve left or right on the RPM (x) axis (again see Figure 1). There are 15 advance spring part numbers used on the 23 Corvette TI distributors.

The last thing to cover in the advance system is the vacuum advance unit. The function of the advance unit is to provide even more advance under light load conditions since an engine will tolerate (without knock) more advance under these circumstances. Vacuum units allow the engine designer to improve the efficiency (largely in the form of improved gas mileage) simply by providing more advance. Vacuum advance units do not have any effect under wide open throttle conditions (as in drag racing), but do play a role in street applications by providing improved driveability. There are eight (8) vacuum advance units used on the 23 Corvette TI distributors.

With every component that affects the advance curve, I have been mentioning how many of each part number were used in order to make 23 Corvette TI distributors. Based on these numbers, there are literally thousands of combinations that could be made if a distributor was built by randomly selecting these parts. Therefore, it is important to know which parts makeup a "used" TI distributor and to be aware of the distinct possibility that someone, at sometime, has had a "better idea" and changed components -- Is yours correct? The best way to insure you do have the correct parts (other than by disassembly) is to have the advance curve checked on a distributor machine and then compare the results to the data on the accompanying chart of Delco distributor specifications

		Centrifugal Advance Data								Vacuum Advance Data			
Dist.Part Numbers	**Rotation (Note 1)**	**Deg.@RPM (Note 2)**		**Deg.@RPM (Note 2)**		**Deg.@RPM (Note 2)**		**Deg.@RPM (Note 2/3)**		**Start Deg.**	**In. Hg.**	**Max.Deg. (Note 2)**	**In. Hg.**
1111060	C	0	400	5.5	750	8	1000	13	1250	0	4	8.25	8.2
1111064	C	0	400	5.5	750	8	1000	13	1250	0	4	8.25	8.2
1111068	C	1	435	5.5	800	--	--	12	2300	0	8	7.5	15.5
1111088	C	1	425	8	800	11	1300	14	2300	0	4	8.25	8.2
1111093	C	0	500	7.5	900	10	1350	14	2300	0	7	6	12
1111142	C	0	450	7	600	9.5	800	15	2500	0	6	7.5	12
1111157	C	0	450	7.5	750	--	--	15	2550	0	4	8.25	8.2
1111240	C	1	550	7.5	900	--	--	14	2300	N.A.	N.A.	N.A.	N.A.
1111248	C	0	450	4.25	625	8.5	1000	16	2500	0	7	6	12
1111258	C	0	450	6	1000	11	1500	15	1900	0	8	7.5	15.5
1111294	C	0	450	4	625	8.5	1000	16	2500	0	7	6	12
1111295	C	0	600	9	950	--	--	15	2500	N.A.	N.A.	N.A.	N.A.
1111296	C	0	450	6	1000	11	1500	15	1900	0	8	7.5	15.5
1111441	C	0	450	8.25	700	10	1000	15	2200	0	8	7.5	15.5
1111465	C	1	660	6	950	8	1400	10	2000	N.A.	N.A.	N.A.	N.A.
1111475	C	1	500	7.5	850	10	1200	13	2200	0	8	7.5	15.5
1111491	C	1	575	5	850	10	1600	13	2500	0	8	7.5	15.5
1111927	C	0	600	8	950	12	1600	14.5	2500	N.A.	N.A.	N.A.	N.A.
1111928	C	0	450	6	1000	11	1500	15	1900	0	8	7.5	15.5
1111954	C	0	450	4	600	8.5	1000	13	1850	0	7	6	12
1112038	C	0	530	1	670	8.5	1200	12	2400	0	8	7.5	15.5
1112053	C	0	545	1	655	11	1200	14	2725	0	7	6	12
1112076	C	1.5	650	5.4	795	12.5	1175	16	2500	0	7	6	12

Notes:
1. Denotes clockwise rotation as viewed from rotor end.
2. Distributor degrees (plus/minus one degree tol.) & distributor RPM.
3. Some mechanical retard occurs above this RPM - approx. 1/2 degree per 500 distributor RPM.

Remember, you can only get maximum engine performance if you are using a distributor with the correct advance curve.

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