



TAKING STOCK OF YOUR BONDS



Front covers or pistons? Billet aftermarket or OEM parts?

The Proper Surface Finish

When rebuilding a torque converter, most shops try to follow the guidelines set by the OEM, the original equipment manufacturer. The goal of most aftermarket torque converter shops is to build a converter that is as close to the OEM as possible. After all, the OEMs have invested a lot of time and money to perfect their manufacturing processes.

However, not all of these OEM processes can be easily duplicated by aftermarket rebuilders. Some of the processes that work well for the OEMs are simply not practical for the local rebuilder. Limitations on equipment and resources prevent most shops from duplicating certain OEM processes. Bonding the TCC friction material to the front cover is a good example. It is difficult for most shops to provide both the temperature and the compression pressure needed for a good bond. The time it takes to bring the bond line temperature of the front cover up to the 400° to 425° Fahrenheit needed for a good bond is more than most shops can economically allot. The large dies needed for proper compression without interference with

the bonder also adds mass that has to be heated, along with the front cover. Many shops have found it is quicker and easier to bond the friction material to the piston instead of the front cover. The shops that now bond to the piston also report that their success rates have gotten better.

When the rebuilder changes the place where the friction material is bonded, a problem can occur. The surface finish used for bonding and the surface finish used as reaction surface are very different. A machined surface is rated on a roughness average (RA) scale.

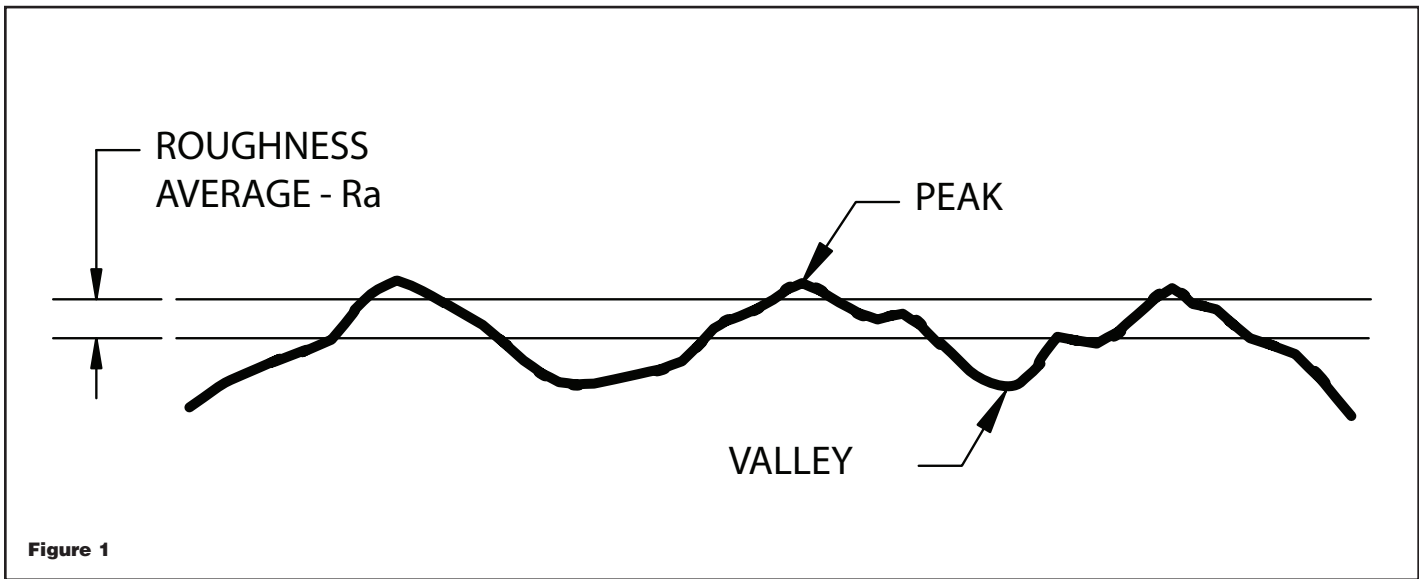
Figure 1 (see following page) is an average of the peaks and valleys of the machine cut. The higher the number, the rougher the surface finish, and the smaller the number, the smoother – or less rough – the surface. A good surface for bonding will have an RA of 90-125, and a good reaction surface will have an RA of 20 to 25 or less. You should never bond to a surface machined

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to a reaction surface RA, and you should never allow a clutch to apply on a surface machined for bonding. You may have some short-term success bonding to a reaction surface, but you will have premature clutch wear in the long run if you apply a clutch against a surface machined for bonding.

Sonnax has recognized the need for two different surface finishes on its billet aftermarket front covers and pistons. The covers and pistons that have the same surface finish as the OEMs will retain their original part numbers. These include the Chrysler 10" front covers and damper plates **CH-CC-1**, **CH-DA-2P**, **CH-DA-3P** and Ford AODE/4R70W 12" front cover **FD-CC-19**. A separate part number has been assigned to the front covers and pistons that deviate from the OEM to alert the rebuilder to the difference. These include **CH-CC-1R**, **CH-DA-2PBM**, **CH-DA-3PB**, **FD-CC-19R** and **FD-CC-20R**. The "R" at the end of the part number designates the new reaction surface, and the "B" designates the new bond surface.

When the pistons were designed to make their surface bond-friendly, the thickness of the piston at the bond surface was increased by .030". This will give the rebuilder the ability to use .040" thick friction material. The rebuilder will no longer have to use .070" thick friction material to maintain proper clutch release clearance. All of the new pistons with this "B" designation will be .030" thicker. Until these new piston plates are available, a modified version of the **CH-DA-2P**, designated as **CH-DA-2PBM**, will have a bond surface finish, but will NOT be .030" thicker. This version of the piston will be available until the new, thicker **CH-DA-2PB** pistons arrive.

A special caution label will also help identify those products that deviate from OEM.

When mixing and matching aftermarket and OEM components, always be sure you have the correct finish for the corresponding bonding and reaction surfaces on each part.