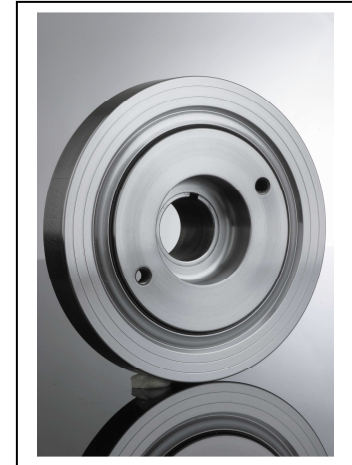


# Supplemental Information & Instructions for 031-206 Harmonic Damper, with Pulley Austin Healey 6 Cylinder Engines

## ***What is It?***

The term so often used for this component is harmonic balancer, which suggests the damper “balances” the engine. This description is potentially confusing... a better description for this component is “harmonic damper” or “torsional vibration damper”. This describes the actual function of the part. Crank pulleys on early British engines were just that- a pulley. As the need for some vibration damping became apparent, the engineering got more sophisticated and the “crank damper” or “harmonic balancer” started showing up on production engines. They are easily identified by a black band of rubber material about 1/8” thick separating an inner ring from the outer ring of the damper assembly.



## ***Why Do I Need One?***

Torsional vibration occurs in the crankshaft of any conventional piston engine as a result of the combustion process. A sudden, massive load on the piston, connecting rod and crankshaft is created by the ignition or firing of the compressed fuel and air in the combustion chamber. This load causes the crankshaft to flex or deflect slightly in the direction of rotation. For an instant, this individual crank-throw is “ahead” of where it should be. Almost immediately, the load disappears as the piston moves down in the cylinder. This individual crank-throw will now “spring back” against the direction of rotation. Like a spring, the crank will “unwind” and flex a little back past its original start position. For an instant, this individual crank-throw is “behind” of where it should be. This oscillating vibration will continue until dissipated by internal friction or damping. At certain rpm ranges these oscillations can fall into phase with one other, creating potentially damaging torsional peaks. Unless the amplitude of these torsional vibrations is controlled, engine components will be damaged. This can include rapid wear of the timing sprockets, stretching or breakage of the timing chain, pitting or cupping of the camshaft and lifters, broken valve springs and valve train failure, and reduced service life of crankshaft bearings. In extreme situations uncontrolled torsional vibrations can lead to a loose flywheel or a broken crankshaft. These problems are more likely with long stroke engines (like the Austin Healey) and with higher horsepower output. Aside from the financial cost, which can be considerable, there are safety issues as well.

## ***How Does it Work?***

The separation of the inner and outer “rings” with a band of elastomer (rubber) allows the two pieces of the damper to move somewhat independently. Because the elastomer binds the two pieces of the damper together, and there is a certain amount of stretch in that elastomer, the inertia ring will continue moving for a fraction of a second after the inner ring changes speed. The elastomer will stretch, then snap back. This action is what dampens the crankshaft vibrations. The mass of the inertia ring is related to the rest of the engine components; you cannot just bolt any harmonic damper on an engine and expect it to work properly. All 6-cylinder Healey engines came with a harmonic damper that incorporated a pulley, or had one attached with bolts.

## ***How Can I Tell if I Need a New One?***

Because of the way they are made, and how they work, it is hard to tell if your original damper needs replacing unless the bond between the inner and outer ring breaks down. You can tell you have a problem because the timing marks start moving around on you, making it impossible to tune the engine. As the elastomer gets old (and we are talking 30 to 40 years here) it loses its elastic properties and becomes brittle.

## 48 **Where is this Damper Made?**

49 The 031-206 Damper is made in Australia by a company that makes dampers for a wide range of racing  
50 applications. They are sold all over the world as private label dampers by Ford Racing, Mopar  
51 Performance and others.

## 52 **What About the Quality?**

53 These dampers are manufactured to extremely high quality standards that are constantly monitored and  
54 checked at every step of the manufacturing process. The quality levels in bore tolerance and the finish of  
55 the machined surfaces, in particular the critical oil seal area, far exceed OE standards and those of  
56 competitive models. Sixty degrees (60°) of computer generated timing marks are accurately laser  
57 engraved. These Harmonic Dampers also feature engraved timing marks at 0°, 90°, 180°, and 270°.  
58 Once assembly of the damper is complete, the entire damper is highly polished and then treated with a  
59 clear protective coating providing an extremely attractive appearance. Our instruction sheets make  
60 installation a snap. Our Dampers are designed for a direct replacement of the stock damper which means  
61 all your accessory pulleys still line up without modification.

### 62 **ALL STEEL construction**

63 *This damper is a direct replacement for the stock damper which is no longer permitted by most racing  
64 sanctioning bodies due to the danger of fracture and high speed disintegration or separation of the  
65 inertia ring from the hub. This problem is eliminated with a PRO/RACE Damper.*

### 66 **Exceeds SFI Spec. 18.1 - Spin tested to 18,000 RPM**

67 *The SFI Foundation, Inc. (SFI) is a non-profit organization established to issue and administer industry  
68 standards for specialty performance automotive and racing equipment. The SFI spec 18.1 specifies the  
69 minimum mechanical properties for the steel used in the construction of the damper. It also requires that  
70 the outer inertia ring is securely bonded to the hub. Dampers submitted to SFI for testing go through a  
71 spin test in which the damper is spun at 12,500 RPM for one hour. These dampers conform to SFI Spec.  
72 18.1. As a further safeguard a damper was tested at 18,000 rpm (a 40% increase); after 15 minutes the  
73 shaft bearings in the test machine failed- but the damper survived !*

74 **Billet steel inertial ring and hub are 100% CNC Machined**  
75 **Inertial ring and hub splined and bonded together with a specially**  
76 **formulated elastomer**

77 *The outer diameter of the inner hub and the inner diameter of the outer  
78 ring are splined (see photo), which provide twice the contact area for  
79 the vulcanized elastomer that bonds the inner hub and outer ring  
80 together. This helps prevent any shifting of the outer ring, a common  
81 problem on OEM stock factory dampers.*



### 82 **60° of engraved timing marks**

### 83 **Easily installed - Instructions included**

84  
85  
86 The latest technical data available from the U.S.A. has shown a dramatic resurgence in the use of S.F.I.  
87 approved harmonic balancers. Tests also proved that a good quality balancer not only dramatically  
88 prolonged engine bearing, crankshaft and cam train life, but showed modest power increases as well.  
89 Our advice - **NEVER** run an engine without a harmonic balancer!

90  
91 *Although every effort has been made to ensure the accuracy and clarity of this information, any suggestions that you may have that will  
92 improve the information (especially detailed installation notes) are welcome. Please use the simple email form on the "Contact Us"  
93 page on the Moss website: <http://www.mossmotors.com/AboutMoss/ContactUs.aspx> If you prefer, you may call our Technical  
94 Services Department at 805-681-3411. So many people call us for help that we are often not able to answer the calls as fast as we'd  
95 like, and you may be asked to leave a message. We apologize in advance for the inconvenience. We will get back to you within 2  
96 business days.*



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