

POWERBOND

Crankshaft Dampers



APPLICATION GUIDE

CRANKSHAFT DAMPER CONSTRUCTION

METALLURGY

STREET

OEM Style dampers are usually manufactured from cast iron. Not all cast iron is created equal and to save cost some aftermarket balancers use regular "grey" cast iron which has limited strength and is prone to cracking.

All POWERBOND STREET series dampers are manufactured exclusively from high strength S.G. iron (also known as nodular iron) which is the same material used in most crankshafts. This high-grade iron has much greater resistance to cracking than the cheaper grey iron.

RACE

POWERBOND RACE dampers are manufactured from solid billet steel bar stock to AUS 1045 specification. Steel is stronger and more wear resistant than aluminium alloy used in some products. Wear resistance is critical in the oil seal and crank nose areas.

Whilst alloy is a lighter base material careful design of the damper can minimize the weight variance when using the stronger steel base material.



DAMPENING MATERIAL

All POWERBOND dampers use a rubber formula that has been developed over 23 years in the damper business. The formula is exceptionally resistant to ageing and gives excellent control of elasticity in the pressure bonding process employed.

ASSEMBLY

In most dampers, pre extruded strip or o-rings are used as the dampening material, which is assembled using various methods that resist inertia ring dislocation with varying degrees of success. Common assembly methods include straight press insertion with or without metal knurling to assist rubber to metal grip and "cold bonding" i.e. glueing the rubber in. Curing of the adhesive is sometimes accelerated by "Post press vulcanisation" similar to cooking the rubber and adhesive in an oven.

These methods generally have limited bond strength and resistance to spinning under high torque forces. The action of the inertia ring can also degrade the rubber metal contact particularly when the metal surfaces are knurled.

SFI ring retention devices such as retaining lips and circlips are critical for safety using these methods as

there is effectively no other force holding the components together other than interference fit.

PRESSURE BONDING – The most time consuming and secure method of damper assembly used by prestige and performance carmakers such as Mercedes Benz, BMW and Porsche. Damper components are chemically primed and assembled in highly accurate pre-heated steel press dies. Specifically formulated rubber is injected into purpose built 100 ton bonding presses and cured in the mould until optimum strength is achieved. This method gives unrivalled rubber to metal bonding strength, resistance to ring dislocation and control of rubber duro or elasticity. All POWERBOND dampers are assembled using state of the art pressure bonding methods.



BALANCE

Assembly of dampers can result in severe run out conditions and eccentricity of rings and centres. One crude method of correcting this problem is to machine the balancer all over after assembly but this only disguises any misalignment in the rubber and ring.

POWERBOND dampers are assembled with extremely accurate tooling making post press machining unnecessary and every balancer is dynamically balanced at the factory for total peace of mind.

All counterweighted POWERBOND RACE dampers have milled counterweights as close to factory balance specifications as possible. Integral counterweights are more secure than bolt in alternatives used by some manufacturers.



POWERBOND RANGE

STREET



The POWERBOND Street Series brings bonded balancer technology within the budget of every performance street engine builder from mild to wild. They also make a great heavy duty standard replacement balancer.

POWERBOND Street Balancers are also perfect for limited spec race classes such as late model stock that require an OEM style balancer.

The bonded dampening rubber in every POWERBOND Street Series balancer eliminates spinning and component separation giving reliable performance in engines used to 6500rpm.

POWERBOND Street Series combine new high strength SG (Nodular) Iron balancer centres with new inertia rings, bonded then balanced to extremely tight tolerances.

All POWERBOND Street balancers feature easy to read permanently etched timing marks on the outer ring.

SFI RACE



The POWERBOND Race Series brings the advantages of bonded balancers to high revving race and street/race applications where an SFI approved balancer is required.

Every Race Series POWERBOND balancer features a precision CNC machined AUSI 1045 steel centre bonded to an equally strong steel inertia ring. Advanced design means that Race Series balancers are very light for an all steel product. In most cases they are only marginally heavier than the original cast iron balancer and generally much lighter than other all steel balancers on the market.

The steel inertia ring of the Race Series models is positively protected against forward and backward movement and has the assurance of bonded rubber to eliminate spinning.

Every model has easy to read computer etched timing marks.

All POWERBOND Race series balancers meet SFI specification 18.1.

SERPENTINE



Late model engines with Serpentine belts driven off the damper ring create much higher loads on both the inertia ring and dampening material. The strength and durability of POWERBOND is even more critical on Serpentine engines particularly in performance or race applications.

POWERBOND Serpentine dampers are available for popular late model applications including Chev LT1, LS1 and LS6 and the Ford 4.6 and 5.4 litre Modular series. To give engine builders maximum flexibility, Street and SFI Race versions are available. In addition Race versions are offered in standard diameter, 10% underdrive, 25% underdrive and 8 rib drive for supercharger conversions.



Garry Rogers Motorsport – G.M. Aurora V8 powered Holden Commodore V8 Supercar. – PB1012-SS POWERBOND Race Damper



APPLICATION				STREET PART NUMBER WEIGHT (lbs)	RACE PART NUMBER WEIGHT (lbs)
OUTSIDE DIAMETER (INCHES)	OVERALL DEPTH	RING WIDTH	BALANCE		

CHEVROLET

283, 307 CUBIC INCH 6 1/4" Street stock speedway light weight				PB1012-ST	PB1012-SS
6.1	2.36	1.32	NEUTRAL	4.6	5.5
283 - 350 Small Block V8 7"				PB2221-ST	PB2221-SS
6.75	2.36	1.32	NEUTRAL	7.1	8.1
283 - 350 Small Block V8 8"				PB1046-ST	PB1046-SS
8.0	2.33	1.6	NEUTRAL	10.4	11.2
400 Small Block V8 8"				PB1050-ST	PB1050-SS
8.0	2.33	1.6	C/W RING	10.5	10.6
400 Small Block V8 7" Light Weight					PB1118-SS
7.0	2.33	1.6	C/W RING		8.1
427 Big Block V8 8"				PB1211-ST	PB1211-SS
8.0	2.68	1.95	NEUTRAL	12.9	15.4
454 Big Block V8 8"				PB1018-ST	PB1018-SS
8.0	2.68	1.95	C/W HUB	14.3	15.9
454 Big Block Light Weight Neutral Balance 7" Diameter				PB1019-ST	PB1019-SS
7.0	2.68	1.5	NEUTRAL	8.9	9.0
350 (5.7L) Small Block LT1 1993 - 1997 (Crank flange mount) Serpentine Belt				PB1481-ST	PB1481-SS
7.5	N/A	1.28	NEUTRAL	8.89	9.25
350 (5.7L) LT1 Small Block 10% Under Drive 6.750" OD Serpentine Belt					PBU1481-SS
6.75	N/A	1.28	NEUTRAL		8.37
350 (5.7L) LT1 Small Block 8 Rib Serpentine Belt Suit Supercharger Conversions					PB81481-SS
7.5	N/A	1.34	NEUTRAL		9.36
350 LT1 Steel Crank Flange (short style) suit F Body 96-97 & Corvette 1996 Replaces OEM No. 12550097 Length 3.417 use with PB1481-SS, PBU1481-SS and PB81481-SS					FHXS1481-SS
350 LT1 Steel Crank Flange (short style) suit F Body 93-95 & Corvette 92-95 Replaces OEM No. 12553250 Length 3.516 use with PB1481-SS, PBU1481-SS and PB81481-SS					FHS1481-SS
350 LT1 Steel Crank Flange (long style) suit Caprice & Impala 93-95 Replaces OEM No. 10168570 Length 4.09 use with PB1481-SS, PBU1481-SS and PB81481-SS					FHL1481-SS
LS1 Generation III All Alloy 5.7L V8 (Camaro & Firebird) Serpentine Belt				PB1480-ST	PB1480-SS
7.5	2.25	1.37	NEUTRAL	10.5	11.2
LS1 5.7L V8 Serpentine Belt 10% Under Drive 6.750" OD					PBU1480-SS
6.75	2.25	1.37	NEUTRAL		9.9
LS1 5.7L V8 Serpentine Belt 25% Under Drive 6.220" OD					PBU1480-SS25
6.22	2.13	1.37	NEUTRAL		9.9
LS1 5.7L V8 8 Rib Serpentine Belt Suit Supercharger Conversions					PB81480-SS
7.5	2.25	2.24	NEUTRAL		11.4
LS1, LS6 5.7L V8 Serpentine Belt Corvette					PB1117-SS
7.5	2.83	2.42	NEUTRAL		8.55
LS1, LS6 5.7L V8 Serpentine Belt Corvette Underdrive					PBU1117-SS
6.75	2.83	2.42	NEUTRAL		7.61

APPLICATION				STREET PART NUMBER	RACE PART NUMBER
OUTSIDE DIAMETER (INCHES)	OVERALL DEPTH	RING WIDTH	BALANCE	WEIGHT (lbs)	WEIGHT (lbs)

CHRYSLER

245 - 265 Hemi 6 Cylinder				PB1003-ST	
6.85	1.7	1.41	NEUTRAL	8.4	
Chrysler 318 340 Small Block				PB1004-ST	PB1004-SS
7.11	2.56	1.2	NEUTRAL	7.7	9.4
Chrysler 318 340 Small Block Street stock speedway light weight				PB1123-ST	
6.1	2.56	1.2	NEUTRAL	5.5	
360 V8 CW				PB1108-ST	PB1108-SS
7.26	2.56	1.2	C/W RING	7.7	9.4
392 Big Block Hemi				PB1115-ST	PB1115-SS
7.08	2.49	1.1	NEUTRAL	7.7	9.1
440 Big Block V8				PB1112-ST	PB1112-SS
7.24	2.56	1.2	NEUTRAL	7.7	9.4

FORD 6 CYLINDER (AUSTRALIA)

200 - 250 CI 6 Cylinder				PB1007-ST	
6.87	2.56	1.28	NEUTRAL	5.8	
250 CI 6 Cylinder EFI 4 Bolt				PB1021-ST	
6.87	2.55	1.28	NEUTRAL	6.3	
3.9L OHC 6 Cylinder EA to 8/89				PB1057-ST	
6.36	3.54	2.36	NEUTRAL	9.6	
3.9 / 4L OHC 6 Cylinder EA - ED 9/89 - On				PB1073-ST	
6.36	3.54	2.36	NEUTRAL	9.7	
4L OHC 6 Cylinder EF				PB1283-ST	
6.85	2.91	1.48	NEUTRAL	9.7	
4L OHC 6 Cylinder AU, BA With Factory Crank Trigger				PB1462-ST	
6.85	2.91	1.48	NEUTRAL	9.7	



Gary Myers – Supercharged Windsor V8 Mustang. Australia's own world burnout champion – PB1060-SS POWERBOND Race Damper

APPLICATION				STREET PART NUMBER	RACE PART NUMBER
OUTSIDE DIAMETER (INCHES)	OVERALL DEPTH	RING WIDTH	BALANCE	WEIGHT (lbs)	WEIGHT (lbs)

FORD V8

302, 351 Cleveland V8				PB1082-ST	PB1082-SS
6.5	3.5	1.39	C/W HUB	9.3	10.9
289, 302 Windsor 3 Bolt (Countersunk pulley location)				PB1008-ST	
6.33	3.0	0.77	C/W HUB	6.6	
289, 302 Windsor 3 Bolt (Raised pulley location)				PB1202-ST	
6.33	3.45	0.77	C/W HUB	6.7	
302, 351 Windsor V8 3 Bolt (Raised pulley location) 28 oz. in.				PB1203-ST	PB1203-SS
6.5	3.18	1.39	C/W HUB	9.2	10.9
302, 351 Windsor V8 3 Bolt (Countersunk pulley location) 28 oz. in.				PB1009-ST	PB1009-SS
6.5	3.18	1.39	C/W HUB	9.1	10.9
302, 351 Windsor 4 Bolt (Raised Pulley Location) 28 oz. in.				PB1060-ST	PB1060-SS
6.5	4.09	1.25	C/W HUB	10.1	11.4
302 Windsor EFI V8 4 Bolt 50 oz. in.				PB1084-ST	PB1084-SS
6.4	4.13	1.57	C/W RING	9.1	10.9
302 Windsor 4 Bolt Hub Counter Weight Ring				PB1070-ST	
6.4	4.13	1.57	C/W RING	9.1	
5.8L EFI Windsor V8 4 Bolt				PB1214-ST	
6.4	4.08	1.20	C/W RING	9.2	
5L EFI Windsor With Factory Crank Trigger (AU Falcon)				PB1463-ST	
6.38	4.05	1.48	C/W RING	9.6	
Windsor Small Block 6" Stock Speedway Lightweight 3 Bolt				PB1479-ST	PB1479-SS
5.9	3.1	1.26	NEUTRAL	6.6	5.9
302, 351 Windsor Neutral Balance Light Weight 4 Bolt					PB1086-SS
6.37	4.13	1.57	NEUTRAL		8.0
390 Big Block FE V8 Internal Balance				PB1111-ST	PB1111-SS
7.0	1.574	1.102	NEUTRAL	7.7	8.9
460 Big Block V8 Internal Balance				PB1210-ST	PB1210-SS
6.62	1.62	1.37	NEUTRAL	8.32	9.60
PB1210-SS Can be used on externally balanced 460 with factory winged counterweight					
4.6L V8 (Mustang, Crown Victoria)				PB1478-ST	PB1478-SS
6.75	1.75	1.25	NEUTRAL	6.8	7.8
4.6L V8 (Mustang, Crown Victoria) 8 Rib Belt Suit Supercharger Conversions					PB81478-SS
6.75	1.75	1.25	NEUTRAL		7.8
5.4L V8 Modular (Mustang, F-Series, Falcon BA) Serpentine Belt				PB1116-ST	PBU1116-SS
7.05*	2.32	1.83	NEUTRAL	9.03	9.1

* Race balancer is 6.35 inch diameter for 10% underdrive

Anthony Selva- Three times Australian Competition Eliminator Champion. Ford Windsor powered rail - PB 1086-SS POWERBOND Race Balancer.



APPLICATION				STREET PART NUMBER WEIGHT (lbs)	RACE PART NUMBER WEIGHT (lbs)
OUTSIDE DIAMETER (INCHES)	OVERALL DEPTH	RING WIDTH	BALANCE		

HOLDEN (GM AUSTRALIA)

149 - 202 Red 6 Cylinder				PB17A-ST	PB17A-SS
6.01	1.2	0.75	NEUTRAL	3.6	4.0
2.8 & 3.3L Blue and Black 6 Cylinder				PB9752-ST	PB9752-SS
6.01	1.2	0.73	NEUTRAL	3.6	4.0
253, 308 V8				PB1013-ST	PB1013-SS
6.55	2.93	1.14	NEUTRAL	7.2	8.3
4.9L EFI V8				PB1081-ST	PB1081-SS
6.55	2.93	1.14	NEUTRAL	7.3	8.3
5.7 Gen III LS1 5.7 V8 Serpentine Belt				PB1480-ST	PB1480-SS
7.5	2.25	1.37	NEUTRAL	10.5	11.2
5.7 Gen III LS1 10% Underdrive					PBU1480-SS
6.75	2.25	1.37	NEUTRAL		9.9
5.7 Gen III LS1 25% Underdrive					PBU1480-SS25
6.22	2.13	1.37	NEUTRAL		9.9

PONTIAC

287 TO 455 CI V8				PB1056-ST	PB1056-SS
6.79	3.24	1.26	NEUTRAL	6.8	10.4

*G.M. Australia – Holden Monaro
(2004 Pontiac GTO) C5R Chev LS1 power.
Winner 2002 Bathurst 24 hour endurance race –
PBU1480-SS POWERBOND Serpentine Race Damper*



PRECISION PARTS

THE NAME BEHIND POWERBOND

Precision Parts is an all-Australian company based in Wagga Wagga New South Wales. The company's rapid growth over more than 25 years can be attributed to the constant range development reflected in this new catalogue.

Our staff use state of the art CAD design and 3D modelling soft ware combined with the worlds best CNC machining centres and fully automated rubber-bonding facilities to produce the new range of POWERBOND performance balancers for customers in Australia, USA and Europe.

Precision Parts vast experience in crankshaft damper and pulley manufacture is also applied to manufacturing over 20,000 OEM style balancers, heavy-duty idler pulleys and performance crank

dampers per month sold throughout the world under various brands

The overriding objective of Precision Parts constant program of plant and equipment upgrades is to provide an Australian made product of exceptional quality at the most competitive price. Precision's commitment to totally quality control has been formalised with the independent certification that the quality management systems comply with ISO9001-2000

Precision Parts will continue to lead market demands in Australia and overseas for a new products and applications. If a particular balancer you require is not listed in this catalogue we would appreciate your feedback to assess the model for future inclusion in the POWERBOND range.



precision
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