



EMBRAGUE

CLUTCH

KUPPLUNG



# mantic

CLUTCH

- Mantic Clutch is the performance clutch division of Clutch Industries (CI) which has been engineering and manufacturing clutch systems for over 60 years.
- Manufacturing and engineering facility located in Melbourne, Australia.
- Mantic products are now sold in nearly every corner of the globe.
- With a focus on research and development, Mantic is the most innovative clutch system in the market.



[MANTIC.COM.AU](http://MANTIC.COM.AU)

***WORLDWIDE DISTRIBUTION***  
***DISTRIBUCIÓN MUNDIAL***  
***WELTWEITER VERTRIEB***



# MANTIC SELECTION GUIDE

TORQUE		20%	40%	60%	80%	100%	120%	140%
DRIVEABILITY		HIGH						
STAGE	STREET	<b>1</b> ER <sup>2</sup> Organic <i>PAGE 7</i> ◆						
		<b>2</b> ER <sup>2</sup> Dual Friction OC <i>PAGE 8</i>					◆	
		<b>3</b> Sprung Centre Cushioned Cerametallic <i>PAGE 9</i>						
	SPORT	<b>4</b> Sprung Centre Undampened Cerametallic <i>PAGE 10</i>						
		<b>5</b> Rigid Centre Undampened Cerametallic <i>PAGE 11</i>						
TRACK	TWIN DISC	STREET	Organic ◆					<i>PAGE 12</i>
			Sprung Centre Cushioned Cerametallic					
		SPORT	Rigid Centre Cushioned Cerametallic					
			Rigid Centre Undampened Cerametallic					
	TRIPLE DISC	STREET	Organic ◆					
			Sprung Centre Cushioned Cerametallic					
		SPORT	Rigid Centre Cushioned Cerametallic					
			Rigid Centre Undampened Cerametallic					

\*Torque capacity increase is only a guide and will depend on your vehicle

## STAGE STREET KIT INCLUDES:



- High clamp load • ER<sup>2</sup> Pressure Plate (Cover Assembly)
- Sprung Centre Cushioned Organic or Cerametallic Clutch Disc
- Clutch Release Bearing or CSC • Spigot bearing • Clutch Aligning Tool • Optional Flywheel & Bolt Kit

## STAGE SPORT KIT INCLUDES:



- High clamp load • SG Iron Pressure Plate • Sprung or Rigid Centre Cerametallic Clutch Discs • Clutch Release Bearing or CSC • Spigot bearing • Clutch Aligning Tool • Optional Flywheel & Bolt Kit



# PATENTED PRESSURE PLATE DESIGN INCLUDED WITH STAGE 1 AND 2 MANTIC PERFORMANCE CLUTCH SYSTEMS

## ER<sup>2</sup> = MORE TORQUE CAPACITY

ER<sup>2</sup>

The pressure plate grooves increase Mean Effective Radius of the clutch pressure plate. As torque is directly proportional to Mean Effective Radius, the torque capacity is also increased. Using CI's in house dynamometer the torque capacity was measured for a non ER<sup>2</sup> pressure plate vs an ER<sup>2</sup> pressure plate giving an 8% increase in torque capacity.

Cover Assemblies with the Patented\* ER<sup>2</sup> Groove Design features a unique groove pattern which is CNC machined on the friction face of the pressure plate.

This groove has been specifically designed to increase the Mean Effective Radius of the pressure plate and assist in heat removal. The increase in the Mean Effective Radius of the cover assembly gives a significant increase in torque capacity.

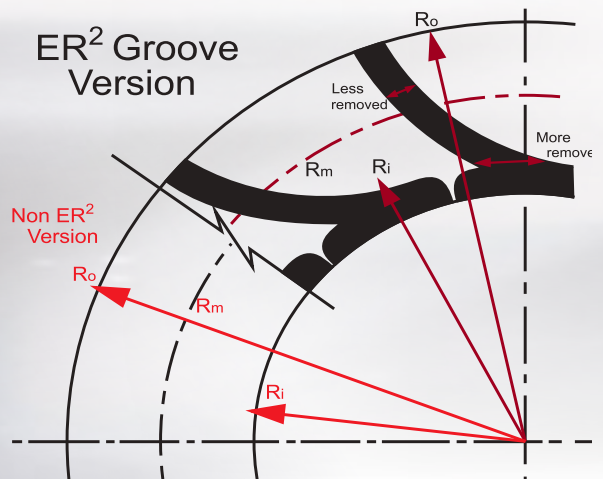
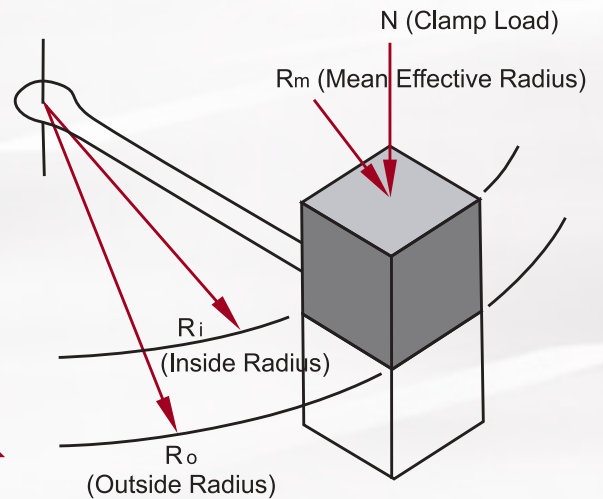
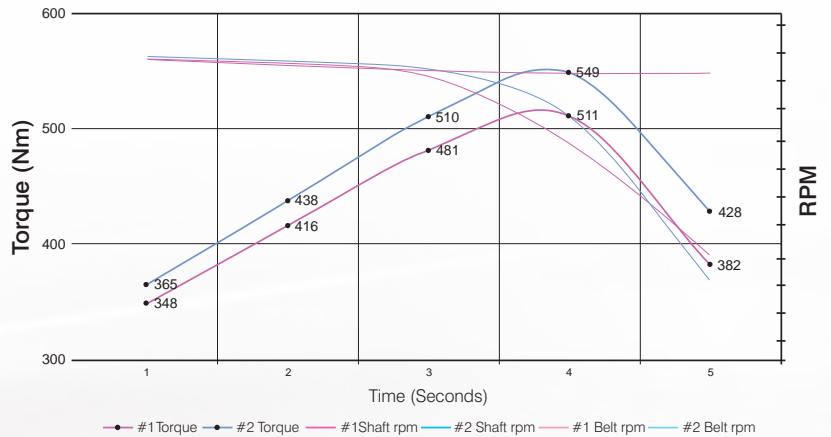
By adding the groove to the pressure plate, the inside radius of the friction face has effectively been increased. The first 5/16 inches (7.9375mm) of the pressure plate has all but been removed and added to this, there is progressively less material removed as the radius increases. The net effect of this is to move the effective inside radius further out.

The Mean Effective Radius of the clutch is directly proportional to the torque capacity of the system. Therefore as the Mean Effective radius increases so does the Torque Capacity of the clutch.



**mantic**  
CLUTCH

Torque Capacity  
#1- Non ER<sup>2</sup>  
#2- ER<sup>2</sup>



## STAGE 1 / ER<sup>2</sup> ORGANIC

This clutch kit is specifically designed for the street performance market.

The high torque capacity cover assembly's pressure plate is manufactured from Spheroidal Graphite casting material, which has a yield strength 300% higher than standard castings. The materials microstructure also improves heat dispersion. In addition, the Mantic Stage 1 features our patented groove design, ER<sup>2</sup>, CNC machined on the friction face of the pressure plate. Our stage 1 clutch system is capable of transmitting more torque than

a standard clutch kit. This overall torque capacity increase has been achieved via higher clamp loads, increased Mean Effective Radius courtesy of the ER<sup>2</sup> designed pressure plate, improved heat displacement and use of a high coefficient of friction organic material on the clutch disc. The clutch disc features organic facing material of both sides of the clutch disc making the stage one clutch system the most driver friendly option in our range.



## STAGE 2 / ER<sup>2</sup> DUAL FRICTION OC

Unique combinations of Organic and Cerametallic friction materials combine to produce increased torque capacity, while maintaining excellent driveability. The result is a higher torque capacity than a stage 1 kit, and better drivability than stage 3 kit. The stage 2 kit offers a high torque capacity cover assembly, plus a Spheroidal Graphite (SG Iron) casting with ER<sup>2</sup>

Technology for maximum strength and higher torque capacity. The clutch disc features an organic friction material on the ER<sup>2</sup> pressure plate side of the disc, combined with cerametallic friction material on the flywheel side.





**STAGE 3**

**SPRUNG CENTRE  
CUSHIONED CERAMETALLIC**

Designed for performance street / track day use where a higher torque capacity is required, but the vehicle may still be used for everyday driving . The stage 3 kit offers a high torque capacity cover assembly with an SG iron burst proof pressure plate, combined with a

sprung centre and cushioned cerametallic clutch disc to provide high torque capacity for those looking for maximum street performance and occasional track use.



# STAGES SINGLE PLATE

## STAGE 4 / *SPRUNG CENTRE UNDAMPENED CERAMETALLIC*

Able to handle more torque than either the stage 1, 2 or stage 3, this clutch is designed for non-street applications. A high torque capacity cover assembly with an SG iron burst proof pressure

plate, combined with a sprung, non cushioned full cerametallic Clutch Disc, this reduces drivability, however does provide for quick engagement and very high torque capacity .



**STAGE 5** / **RIGID CENTRE  
UNDAMPENED CERAMETALLIC**

Our most aggressive system in the single disc range, the Stage 5 clutch is designed exclusively for track/motor sport applications. The stage 5 kit offers

a high torque capacity cover assembly with an SG iron burst proof pressure plate, combined with a rigid hub, undampened Cerametallic Clutch Disc.



# MANTIC TRACK SERIES

All Clutch Systems in the Mantic Track Series feature:

- Lower Moment of Inertia(MOI) to increase acceleration.
- Dynamometer tested.
- Field tested on both street and track.
- ISO9001 Quality Certified.
- Modular designs as well as many direct fit applications.



## MANTIC 9000 SERIES

LOW MOI

The Mantic 9000 series is a 9" (230mm) diameter multiple application clutch system. Available in twin and triple disc configurations with four different plate options. It offers up to 1106ft lbs (1500Nm) of torque drive, with low MOI (Moment of Inertia) for superior performance. The 9000 series is available as a modular kit as well as in many popular direct fit applications.



## MANTIC 7000 SERIES

LOW MOI

The Mantic 7000 series is a 7.25" (185mm) diameter modular racing clutch, available in twin and triple disc configuration. It offers up to 984ft lbs (1330Nm) of torque drive, with low MOI (Moment of Inertia) for superior track performance. The 7000 series come with rigid centre, undampened cerametallic clutch discs. The discs are available with all popular spline sizes



## MANTIC 5000 SERIES

LOW MOI

The Mantic 5000 series is a 5.5" (140mm) diameter modular racing clutch, available in twin and triple disc configuration. It offers up to 740ft lbs (1000Nm) of torque drive, with low MOI (Moment of Inertia) for superior track performance. The 5000 series come with rigid centre, undampened cerametallic clutch discs. The discs are available with all popular spline sizes.



# TRACK MULTI PLATE

## STREET TWIN / ORGANIC

This system features a twin sprung centre cushioned organic clutch disc that offers a considerable torque capacity increase over the OE system, while offering no compromise on the driveability.

Available in the Mantic 9000 Series (9"/230mm diameter) the street twin organic plate can hold over 800Nm of torque.

All direct fit kits include a lighten steel flywheel which along with the aluminium cover, provide a light weight solution that helps increase acceleration.



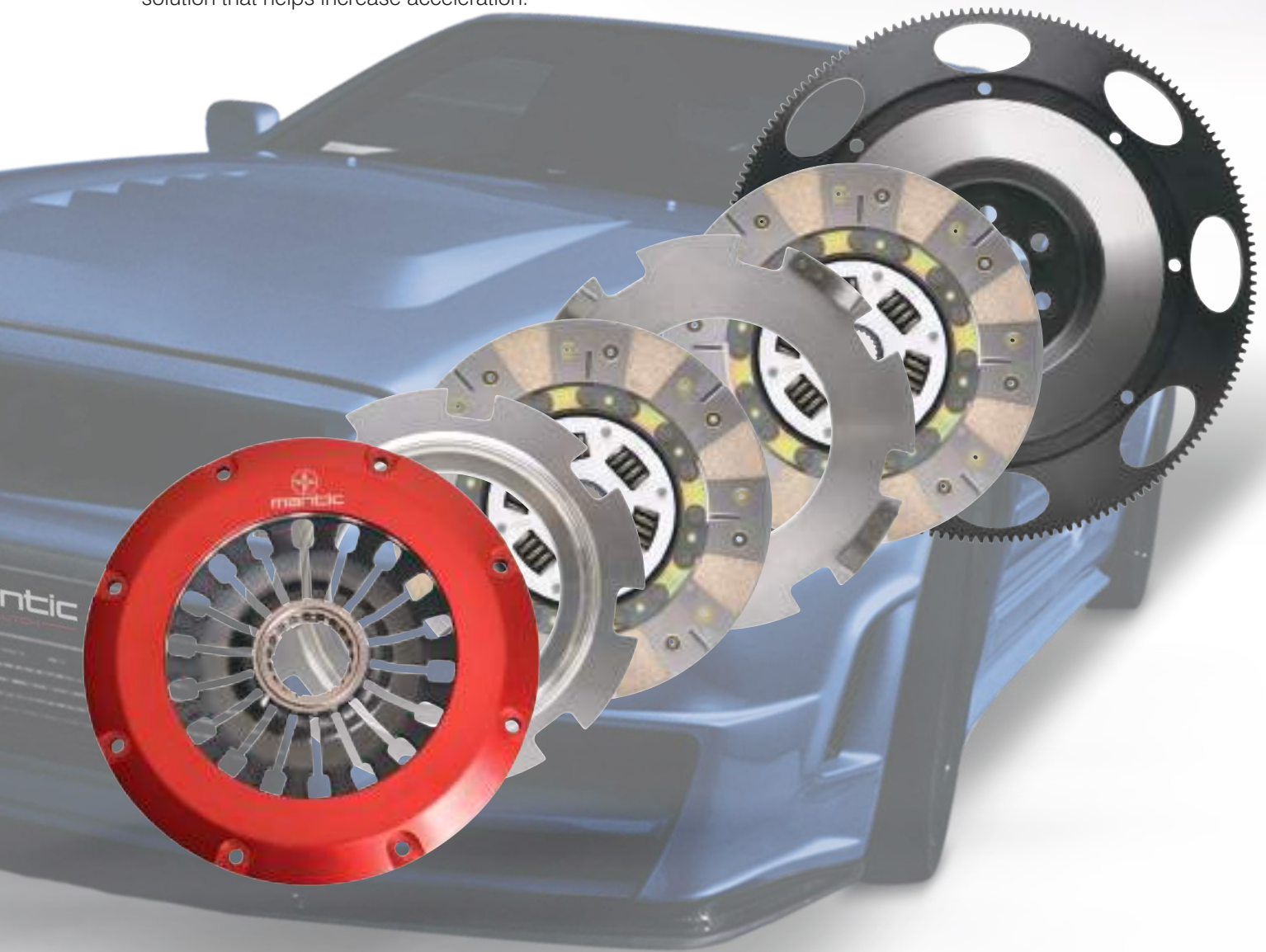
## STREET TWIN

## SPRUNG CENTRE CUSHIONED CERAMETALLIC

This system features a sprung centre cushioned segmented cerametallic clutch disc that offers a level of performance above organic discs, while offering little compromise in driving style and vehicle usage. Designed to be used both on the street and for track or motor-sport applications.

Available in the Mantic 9000 Series (9"/230mm diameter) the street twin cerametallic disc can hold over 1000Nm of torque.

All direct fit kits include a lighten steel flywheel which along with the aluminium cover, provide a light weight solution that helps increase acceleration.



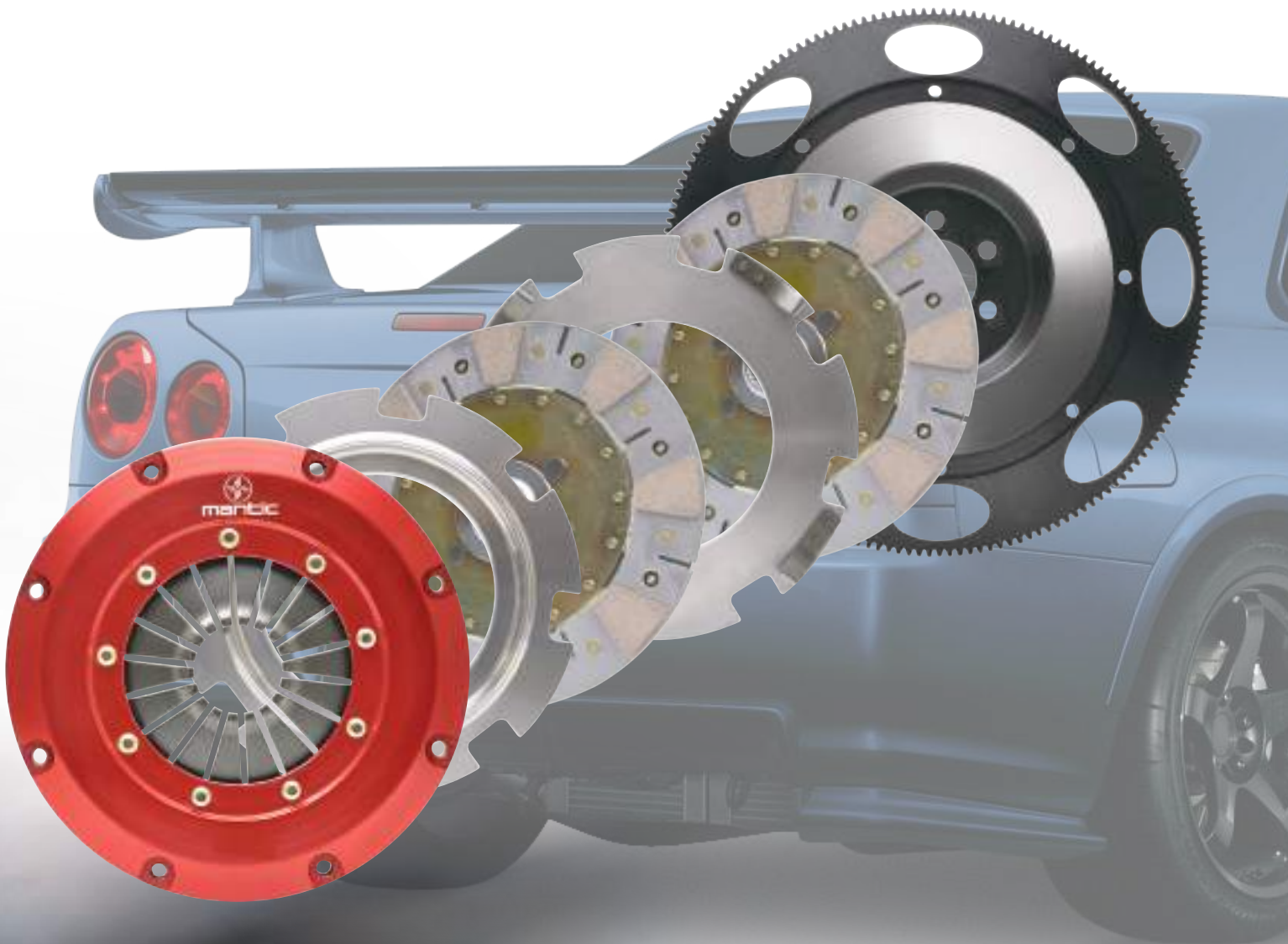
# TRACK MULTI PLATE

## SPORT TWIN / RIGID CENTRE CUSHIONED CERAMETALLIC

This is a rigid centre with a cushioned cerametallic disc that allows for a harder driving style while also providing some dampening. Designed for track applications that still require some compromise for driveability.

Available in the Mantic 9000 Series (9"/230mm diameter), the track twin cushioned cerametallic plate can hold over 1000Nm of torque.

All direct fit kits include a lighten steel flywheel which along with the aluminium cover, provide a light weight solution that helps increase acceleration.



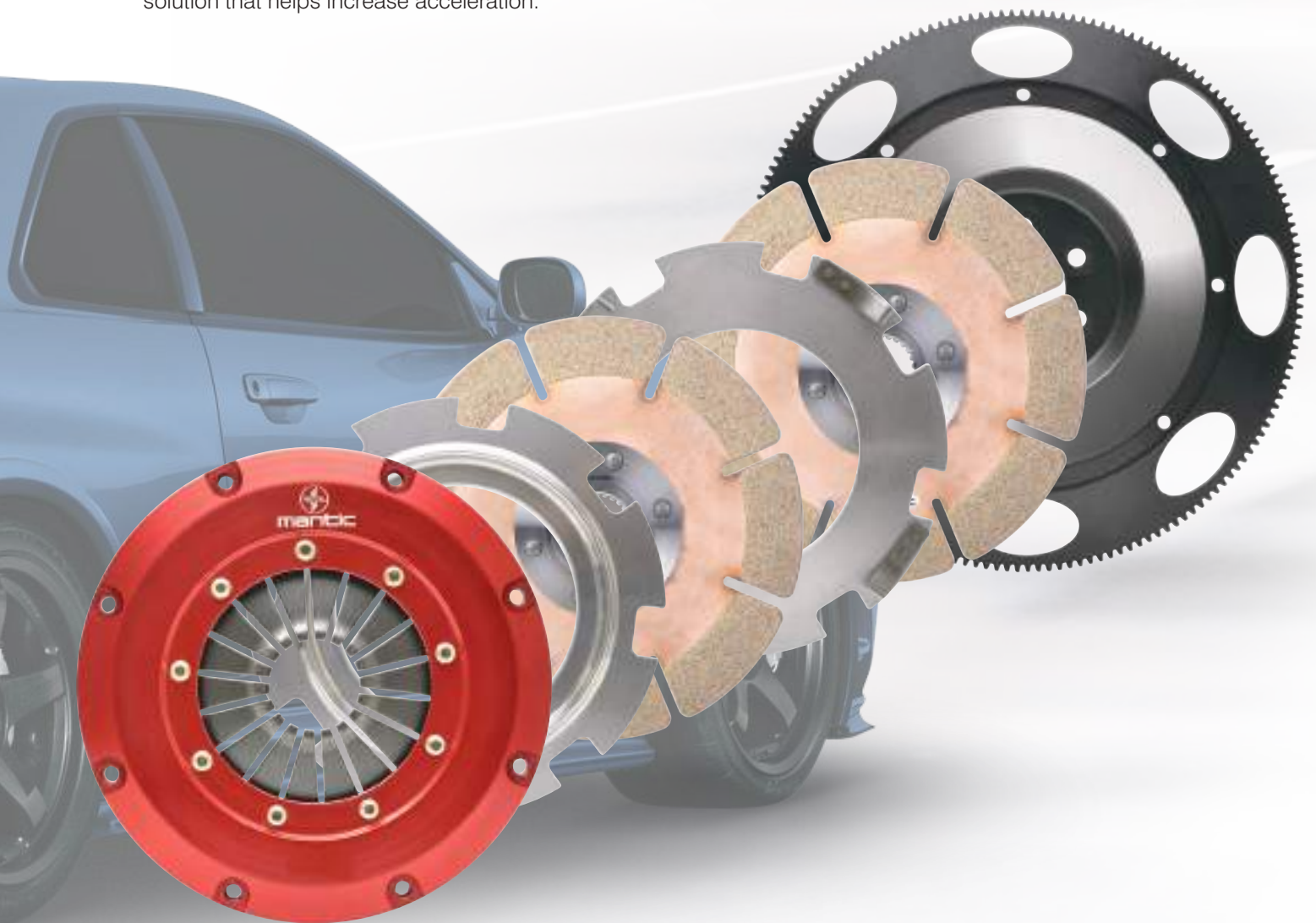


## SPORT TWIN / RIGID CENTRE UNDAMPENED CERAMETALLIC

The rigid centre, undampened cerametallic disc, is the most aggressive level in the Mantic 9000 range. Designed for pure performance, the engagement is sudden, limiting the chance of slippage. It is recommended for track use only.

Available in the Mantic 9000 Series (9" / 230mm diameter), Mantic 7000 Series (7.25" / 184mm diameter) and the Mantic 5000 Series (5.5" / 140mm diameter) the track twin rigid centre undampened cerametallic plate can hold over 1000Nm of torque.

All direct fit kits include a lighten steel flywheel which along with the aluminium cover, provide a light weight solution that helps increase acceleration.



# TRACK MULTI PLATE

## STREET TRIPLE / ORGANIC

The Mantic 9000 Organic Triple Disc System has been described as the best high performance street clutch available today. While providing outstanding levels of torque capacity, this clutch system also provides low pedal effort (light pedal) which is designed to be driven everyday.

Available in the Mantic 9000 Series (9"/230mm diameter) the street triple organic plate can hold over 1200Nm of torque.

All direct fit kits include a lighten steel flywheel which along with the aluminium cover, provide a light weight solution that helps increase acceleration.

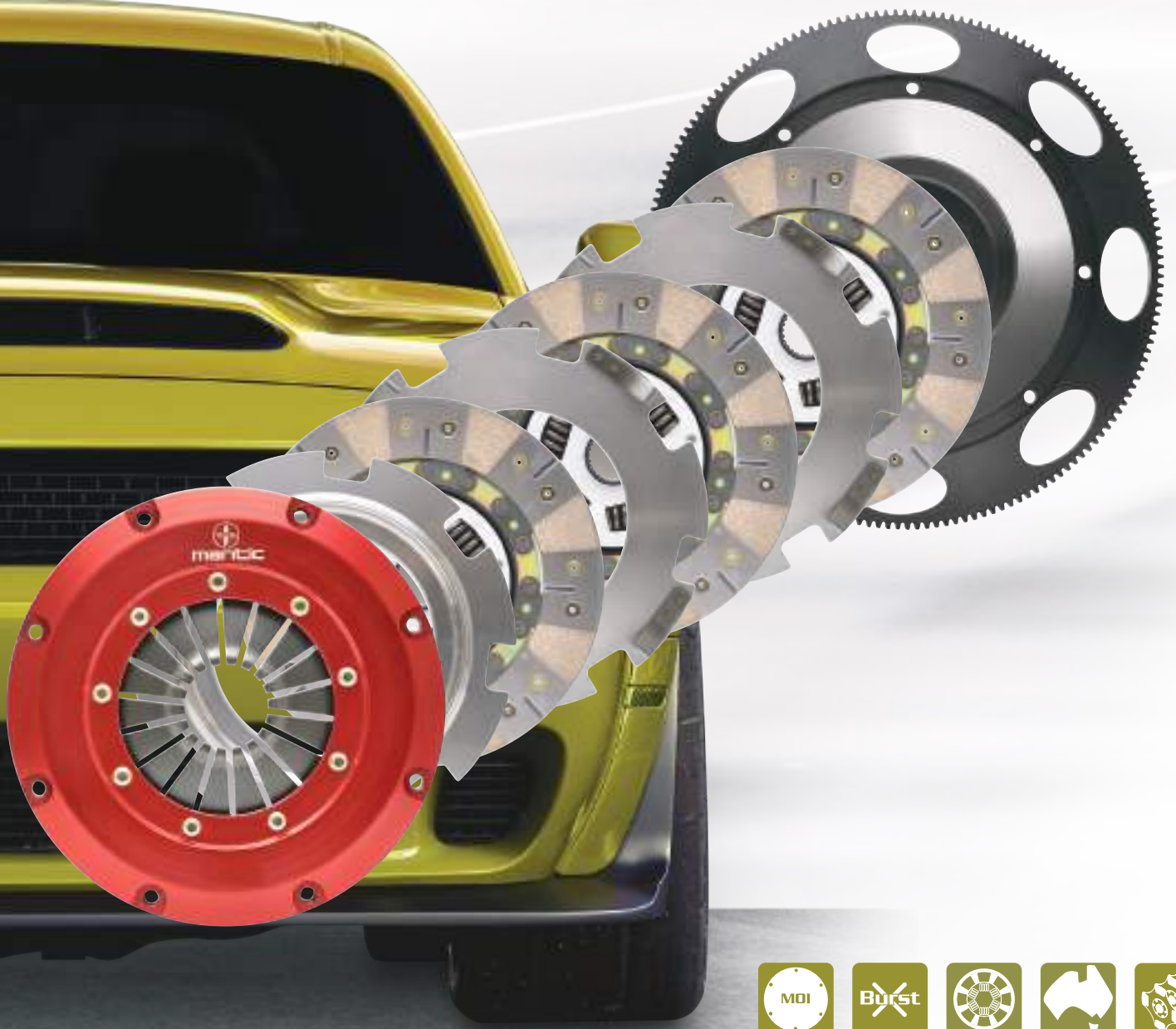


## **STREET TRIPLE** / **SPRUNG CENTRE CUSHIONED CERAMETALLIC**

This is a sprung centre cushioned segmented cerametallic clutch disc that offers a level of performance above organic discs, while offering little compromise in driveability. Suited for both street and track use, this is the ultimate all rounder clutch system.

Available in the Mantic 9000 Series (9"/230mm diameter) the street triple sprung centre cushioned cerametallic can hold over 1500Nm of torque.

All direct fit kits include a lighten steel flywheel which along with the aluminium cover, provide a light weight solution that helps increase acceleration.



# TRACK MULTI PLATE

## **SPORT TRIPLE** / **RIGID CENTRE CUSHIONED CERAMETALLIC**

This is a rigid centre with a cushioned cerametallic disc that allows for a harder driving style while also providing some dampening. Designed for track applications that still require some compromise for driveability.

Available in the Mantic 9000 Series (9"/230mm diameter) the track triple cushioned cerametallic plate can hold over 1500Nm of torque.

All direct fit kits include a lighten steel flywheel which along with the aluminium cover, provide a light weight solution that helps increase acceleration.



## **SPORT TRIPLE** / **RIGID CENTRE UNDAMPENED CERAMETALLIC**

The rigid centre undampened cerametallic disc is the most aggressive level in the Mantic 9000 range. Designed for pure performance, the engagement is sudden, limiting the chance of slippage. It is recommended for track use only.

Available in the Mantic 9000 Series (9" / 230mm diameter), Mantic 7000 Series (7.25" / 184mm diameter) and the Mantic 5000 Series (5.5" / 140mm diameter) the track triple rigid centre undampened cerametallic plate can hold over 1500Nm of torque.

All direct fit kits include a lighten steel flywheel which along with the aluminium cover, provide a light weight solution that helps increase acceleration.



### FLYWHEELS

Top of the range Mantic billet machined with integral ring gear. Standard on all Mantic 9000 twins and triples. The integral ring gear avoids any issue of potential ring gear separation in extreme conditions. These products are also SFI approved. Where applicable, ring gears also include a timing sensor ring.

These flywheels have been uniquely designed to suit the Mantic product. Also available for the Single Stage Series, is the lightened aluminium flywheel which reduces the weight while not compromising on strength.



### SPIGOT BUSHES

Mantic maintains a range of spigot bushes and bearings necessary to complete the installation of our clutch kits. While these terms are of relatively low cost, their importance cannot be underestimated. These parts are important as they guide the input shaft of the gearbox. In addition, a faulty Spigot bush may generate an unwanted noise.

### FLYWHEEL BOLTS

These bolts are available as a separate part, however all Mantic flywheels include bolts. Bolt specification is important and if you are unsure, ask your supplier for bolt specifications before you install the new flywheel.

### CLUTCH ALIGNING TOOL

Mantic can provide low cost aligning tools to suit specific spline types and sizes, or Mantic can provide an Aligning tool kit which covers the most popular sizes and is reusable.



# SFI TESTING AND APPROVAL

Unlike many suppliers in the performance market Mantic has the capability to test its products in house. Having said that, Mantic seeks independent verification of results from external sources such as SFI in the USA.

## Who is SFI?

The SFI Foundation Inc. (SFI), is a non-profit organisation, established to issue and administer standards for the quality assurance of specialty performance and racing equipment. The SFI Foundation has served the automotive aftermarket and the motorsports industry since 1978. Our service to the industry is a system of developing and administering various standards, certifications and testing criteria for use in motorsports.

## Testing includes

**MECHANICAL PROPERTIES** to determine yield strength, tensile strength and elongation.

**ROTATIONAL INTEGRITY** - designed to confirm that no sign of failure, such as cracks appears and will be determined by either Fluorescent Dye Penetrant Inspection or Magnetic Particle Inspection.

## CAD / CAM Technology

(Computer-aided design and computer-aided manufacturing)

**Computer-aided design (CAD)** is the use of computer systems to aid in the creation, modification, analysis, or optimisation of design. Mantic's in house CAD facilities combine with a range of tools for creating design and production drawings, provide design analysis, allow accurate cost estimation, rendering and animation as to create a robust system for developing innovative products.

**Computer-aided manufacturing (CAM)** software uses the models and assemblies created in CAD software to generate tool paths that drive the machines that turn the designs into physical parts. CAD/CAM software is used for machining of prototypes and finished parts.

## Balancing

A flywheel, pressure plate or complete cover assembly that is out of balance will cause vehicle vibration that increases with engine speed.

Mantic's manufacturing process controls call for products to be balanced at varying stages of production. Balancing of cover assemblies' takes place at 2 stages. Initially the pressure plate is balanced in isolation. Then once the cover assembly has been completed the balance is checked and corrected if necessary. This 2 stage process is one more than many manufacturers undertake, relying upon a final balance once the cover assembly is completed.

Mantic also balances its Flywheels using dedicated equipment design, specifically to balance flywheels.

# WE ARE MANTIC CLUTCH

Mantic is known for its bold innovation. It is through this innovation that Mantic has been able to leverage its strengths and compete successfully in both the Australian and overseas markets. An extensive Research and Development (R&D) department with a highly skilled engineering team combined with the largest local manufacturing capabilities enables Mantic to differentiate itself from competitors in terms of both product and service. Unlike a number of performance clutch manufacturers, our production facilities are also included in our QS quality accreditation. Meaning that not only our company, but specifically our engineering and production facilities are ISO9001 certified.

In particular, it is our capability to provide the widest range of professionally engineered products in the category, all supported by an outstanding after sales support and service network, which sets us apart from the competition.





# RESEARCH & DEVELOPMENT

In conjunction with CI, Mantic operates the largest research and development centre in Australia. Our engineering staff has access to the most advanced testing and design facilities of their type in the region.

Equipment	Testing	Format	Purpose	Impact
<b>Burst Test</b>	Test burst strength of cover	Specific Test equipment designed to reach 15,000RPM and hold speed for predetermined amount of time	Proof strength stability in extreme circumstances. Critical for SFI accreditation	Non tested components may fail may cause death to use
<b>Full cover Assembly functional test</b>	Critical cover assembly specifications	Clamp load, bearing load, stack height, pressure plate lift, wear characteristics of cover	Critical for product development, and quality checks in production	Full design check of Cover assembly function properties
<b>Dynamometer</b>	Torque capacity fade test, wear test, friction test	Specific Test Rig with electronic output from strain gauge to ascertain Torque	Torque capacity and coefficient of friction values can be ascertained	Only Australian clutch company to have dynamometer capability for clutch
<b>Durability Test Cover Assemblies</b>	Diaphragm/Spring and lever spring fatigue test	Static stroking of cover assemblies	Ascertain fatigue life of cover assembly spring	Ability to test all covers supplied by CI
<b>Durability Test Clutch Plate</b>	Fatigue test of all drive springs withing clutch plate assembly	Oscillate clutch plate in both drive and Over-run conditions for > 1 million cycles	Ascertain fatigue life of cover assembly spring	Ability to test all clutch plates supplied by CI
<b>Functional test of clutch plates</b>	Test Clutch plate in accordance with it's matching cover assembly	Cushin run-out and release of clutch plates	Check quality and design specification	Ability to match clutch plates and differing specs for clutch system design
<b>Dynamic Thrust Bearing Fatigue Test</b>	Stroke thrust bearing at operation temperature	Specific test equipment built for this purpose	Test bearings in real world environments to ascertain suitability	Ability to test all thrust bearing supplied by CI
<b>Torque V's Angularity Test of Clutch plates</b>	Oscillate clutch plate through Drive and Overrun	Electronic graphing of this vital characteristic for comparison	Assist in clutch plate selection for particular application	Full design capability of Clutch plates
<b>CAD modelling of all performance clutches</b>	Critical cover assembly specifications	Clamp load, bearing load, stack height, pressure plate lift, wear characteristics of cover	Critical for product development, and quality checks for production.	Full design check of cover assembly function properties



*"It is our capability to provide the widest range of professionally engineered products in the category which sets us apart from the competition."*



# PART NUMBERING SYSTEMS

## Part Numbering System Mantic Stages 1 - 5

**MS 1 - 2002 - CS**

**Mantic Stage**

**Stage 1 - 5**

- 1** = Stage 1 - SG Iron with ER<sup>2</sup> Groove with Organic Disc.
- 2** = Stage 2 - SG Iron with ER<sup>2</sup> Groove with Organic / Cerametallic Disc.
- 3** = Stage 3 - SG Iron with Cerametallic, sprung and cushioned Disc.
- 4** = Stage 4 - SG Iron with Cerametallic Sprung Non Cushion Disc.
- 5** = Stage 5 - SG Iron with Cerametallic Undampened Disc.

**Flywheel Option**

- X** = No Flywheel
- S** = Inc Steel Flywheel
- D** = Inc Dual Mass Flywheel
- R** = Inc DMR Flywheel
- A** = Inc Aluminium Flywheel

**Bearing Option**

- X** = No Bearing
- B** = Inc Release Bearing
- C** = Inc Concentric Slave Cylinder

**Vehicle Code**

## Part Numbering System Mantic 9000, 7000, 5000

**M 9 2 1 2 0 2**

**Clutch Type**

- M** = Complete Kit Inc Bearing or CSC + Flywheel
- B** = Complete Kit No Flywheel
- P** = Complete Kit No Bearing No Flywheel

**Clutch Diameter**

- 9** = 9000 series 230mm (9")
- 7** = 7000 series 185mm (7.25")
- 5** = 5000 series 140mm (5.5")

**No of Disc's**

- 1** = Single Disc
- 2** = Twin Disc
- 3** = Triple Disc

**Vehicle Code**

**Moment of Inertia + Diaphragm**

- 0** = MOI + Std Diaphragm
- 2** = MOI + Heavy Diaphragm
- 4** = MOI + Pull Type

**Clutch Disc Type**

- 1** = Sprung cushion Cerametallic
- 2** = Rigid Center Cushion Cerametallic
- 3** = Rigid Centre Undampened Cerametallic
- 4** = Sprung Cushion Organic
- 5** = Multi Rate Sprung Cushion Cerametallic
- 6** = Multi Rate Sprung Cushion Organic

# ICONS



Organic Plate



Twin Disc



Dual Friction OC



Triple Disc



Sprung Centre  
Cushioned  
Cerametallic



M.O.I



Rigid Centre  
Cushioned Cerametallic



ER<sup>2</sup> Groove Design



Rigid Centre  
Cerametallic



Anti - Burst



Rigid Centre  
Undampened  
Cerametallic



Australian Made  
& Designed



Sprung Centre  
Undampened  
Cerametallic

## Terms and Conditions of use:

The information contained within this document is provided for informational purposes only. Mantic Engineering Pty Ltd endeavours to ensure that all information contained in this document is complete and correct at the time of inclusion. However, the completeness and correctness of the information cannot be guaranteed and persons relying on information contained in this document do so completely at their own risk.

Information is supplied "as is" without warranty of any kind, either expressed or implied. Neither Mantic Engineering Pty Ltd nor its affiliates shall be liable for any consequential or punitive damages arising directly or indirectly from the use of material contained within this document.



---

**Clutch Industries PTY LTD (HQ)**

15 Macquarie Drive  
Thomastown VIC 3074

**[clutchindustries.com.au](http://clutchindustries.com.au)**

---